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Dioxogen

THE PURIFIED AND STABLE PEROXIDE OF HYDROGEN

The war has enhanced the reputation of Peroxide of Hydrogen as an efficient means of treating infected wounds. Its remarkable oxygenating effects, when employed for Tetanus and Gas Gangrene, have been vouched for by a long list of surgeons and especially of French surgeons.

The results gained from its use alone or in conjunction with other antiseptics have fully borne out the oft made assertion that in the treatment of infected wounds or in any conditions in which the employment of a germicide is called for, Peroxide of Hydrogen holds a position second to none.

DIOXOGEN surpasses the ordinary preparations of Peroxide of Hydrogen in the following salient features:

DIOXOGEN is nearly half again as strong as ordinary Peroxide and is practically free from impurities.

DIOXOGEN is possessed of extraordinary stable properties —a most essential property, especially in time of war. Its loss will not exceed 5% in a year.

DIOXOGEN has great germicidal powers, it oxygenates and thus inhibits the growth of microorganisms, and is harmless to healthy tissue.

DIOXOGEN does not change in taste, color or odor, as do the acetanilid preserved solutions.

In short, while the effects of even the carelessly made solutions of Peroxide of Hydrogen are good, those of DIOXOGEN, because of its freedom from defects, are infinitely better.

Physician's sample will be gladly sent on request.

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AND
NEOSALVARSAN

I AM about to place on the market American Salvarsan and Neosalvarsan, made according to the Ehrlich processes, as carried out by Farbwerke, v. Meister Lucius & Brüning, Hoechst a/Main. It will be made at my new Brooklyn plant, under the supervision of Dr. G. P. Metz, who was instructed in the processes of manufacture at Hoechst.

My plant in Brooklyn, which I have incorporated as the "H. A. Metz Laboratories, Inc.," is nearly completed, and is already turning out Salvarsan, though not yet in commercial quantities. I hope not later than July 1st to supply American Salvarsan and Neosalvarsan to the medical profession and hospitals at a price materially less than that of the imported product, saving the expenses incurred by a duty of 30%, importation charges and royalties.

My plant will be large enough to make the product available also for export to South and Central American countries.

I bespeak the cooperation of physicians in this enterprise, and assure them that no labor or expense will be spared to give them a perfect Salvarsan service.

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Farbwerke-Hoechst Company
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Differs from other preparations of the Hypophosphites. Leading Clinicians in all parts of the world have long recognized this important fact. HAVE YOU?

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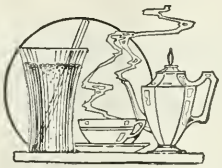

The Composition of Coca-Cola and its Relation to Tea

We have compiled a manuscript giving a detailed analysis of the recipe of Coca-Cola, which is as follows:

Water, sterilized by boiling (carbonated); sugar, granulated, first quality; fruit flavoring extracts with caramel; acid flavorings, citric (lemon) and phosphoric; caffein, from tea.

The following analysis, by the late Dr. John W. Mallet, Fellow of the Royal Society and for nearly forty years Professor of Chemistry in the University of Virginia, shows the comparative stimulating or refreshing strength of tea and Coca-Cola, measured in terms of the number of grains of caffein, the stimulating principle.

		grains
Black tea (hot)	*—1 cupful (5 fl. oz.)*	*1.54*
Green tea (cold)	*—1 glassful (8 fl. oz. exclusive of ice)*	*2.02*
Coca-Cola (fountain)	*—1 drink, 8 fl. oz. (prepared with 1 fl. oz. Syrup)*	*1.21*
Coca-Cola (bottlers)	*—1 drink, 8 fl. oz. (prepared with 1 fl. oz. Syrup)*	*1.12*

From the above recipe and analysis, which are confirmed by all chemists who have analyzed these beverages, it is apparent that Coca-Cola is a carbonated, fruit-flavored modification of tea of a little more than one-half its stimulating strength.

A copy of the manuscript referred to above will be mailed on request and The Coca-Cola Company invites specific inquiry from the medical profession.

THE COCA-COLA COMPANY ATLANTA, GA.

12M

Delicious—Refreshing

Coca-Cola

TRADE MARK REGISTERED

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ESPECIALLY IN CHILDREN

is promptly relieved and the road to recovery is made safe and comfortable by the application of hot Antiphlogistine over the entire abdominal wall.

Antiphlogistine
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produces a depletion of the enteric and peritoneal vessels and stimulates the solar and hypogastric plexuses, relieves the tenesmus, the muscular rigidity and the pain.

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of a food is almost the first consideration in selecting a substitute for breast milk in Infant Feeding, where for any reason it is deemed necessary to resort to artificial feeding.

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has a high nutritive value—possessing at the same time the added advantage of being a clean, wholesome and easily prepared food, which is dependable at all times.

Samples, Analysis, Feeding Charts in any language, and our 52-page book, "Baby's Welfare," will be mailed upon receipt of professional card.

Borden's Condensed Milk Company
"Leaders of Quality"
Est. 1857
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In the Feeding of Young Infants

a safe and very satisfactory substitute for mothers' milk is Trommer Malt Soup. Unfortunately, too little attention has been paid in the past to the diastasic ferment and carbohydrates that are found in human milk and which play such an important part in infant nutrition. In fact most artificial infant foods contain no diastase whatsoever. It is not surprising, therefore, that the use of these foods is so often followed by malnutrition.

To those who have realized, however, the importance of diastase in the artificial feeding of infants, Trommer Malt Soup has solved the problem. Easily made with

Trommer Diastasic Malt Extract

many a physician has learned during the past forty years to turn to this standard extract of malt when confronted by the necessity of providing a safe and suitable diet for infants denied their mothers' milk.

The simplicity and convenience ot the food thus produced, not only make it especially appealing but it is so easily and quickly prepared that the amount required for each feeding can be made up as needed, thus avoiding the dangers of contamination that always menace the food that must be kept standing.

Babies placed on Trommer Malt Soup do splendidly, and the gain in weight, vitality and strength leaves nothing to be desired. The effect on the alimentary canal is particularly gratifying and it is a notable fact that infants fed with this food are remarkably free from digestive disturbance. This naturally suggests the use of this food during the heated season, and summer diarrhea rarely afflicts infants thus nourished.

It is a fact of no little significance that medical men who once commence the use of Trommer Malt Extract in the modification of cows' milk rarely if ever return to any other food. The results obtained make it entirely unnecessary.

Send for valuable booklet on
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As a GENERAL SYSTEMIC TONIC
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Dose: One tablespoonful after each meal.
Children in proportion.

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Prunoids act by stimulating natural functions, and, in consequence, are notably free from the drawbacks of usual cathartics.

DOSE—One to three tablets at bedtime as required.

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—DELICIOUS— —SUSTAINING—

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FOR
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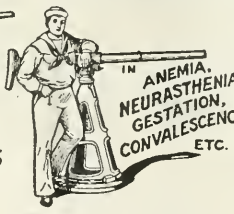

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Note the miscibility of the Emulsified oil.

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in summer diarrhea, intestinal catarrhs, etc.

DOSE: **Infants:** 2 to 6 grains several times a day in gruel. **Children:** 7½ to 15 grains, **Adults:** Half a teaspoonful (15 to 30 grains in powder or 5-grain tablets) three to five times a day at hourly intervals.

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on the teeth (crowns and roots) and the resultant irritation, inflammation and infection of the gums, are the principal causes of pyorrhea.

PYORRHOCIDE
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when used habitually—twice daily—as a dentifrice prevents the formation of deposits—both mucoid and salivary (tartar). As an auxiliary in the treatment of pyorrhea, it cleans and polishes the teeth, and repairs soft, bleeding, spongy, receding gums—manifestations of intermediate and advanced

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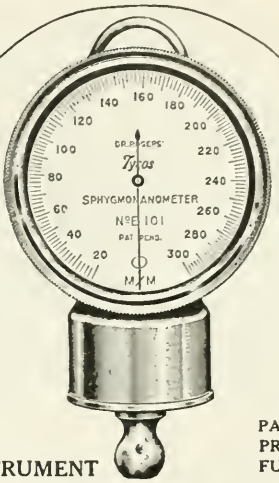

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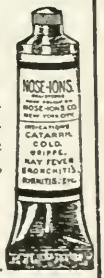

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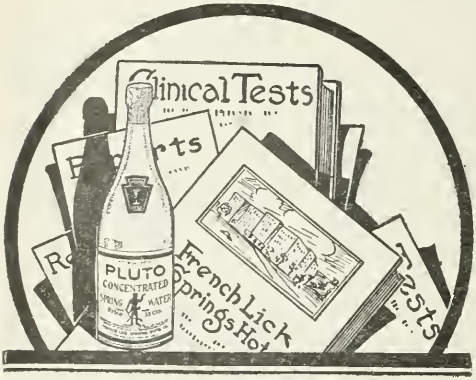

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WHITE MINERAL OIL
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is absolutely safe, being prepared by the careful, slow methods which 40 years' experience in the refining of petroleum products for medicinal purposes have shown to be essential in order to maintain the highest standard of quality.

Neither acid nor alkali is used in the process. "Vaseline" White Mineral Oil meets all requirements for "Liquid Petrolatum" U. S. P. VIII—U. S. P. IX and B. P. 1914. It spreads and mixes readily with the fæces and will be found unequalled for the treatment of all conditions in which an intestinal lubricant is indicated.

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This Package contains
Two Sterile Tapes, hermetically sealed in glass for tying the cord
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On request, a serviceable quantity of the preparation will be sent prepaid to any physician.

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HILLSIDE CHEMICAL COMPANY, Inc. **Newburgh, N. Y.**

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CVI, No. 1. NEW YORK, SATURDAY, JULY 7, 1917 WHOLE No. 2014.

Medicine and Surgery in the Army and Navy

THE ARMY MEDICAL SERVICE.*

BY T. H. GOODWIN, C. M. G., D. S. O.,

Colonel, Royal Army Medical Corps; Member of the British Commission to the United States.

The pomp and panoply of war is a phrase, not a reality. In modern warfare there is no pomp and no outward glory. It is only when looking beneath the surface that one sees the nobility, devotion to duty, and selfsacrifice of the men in the medical service work which is done quietly and unostentatiously, often unheard and unseen except by the men doing it, and they are the last ever to talk of it.

There have been many erroneous ideas as to personal danger run by the medical service staff. One was that as noncombatants they faced none; another was that the losses in the medical personnel in this war were very severe. The former idea underestimated the truth and the latter greatly exaggerated it. The statement that 60,000 medical men had been killed could be gauged as to accuracy by the fact that the total medical force was only 12,000. It is true, however, that the loss has been serious, considered chiefly from the point of view of the value of these trained units in the army service. During three months last year fifty-three officers were killed and 203 wounded, and these figures gave a true idea of the actual situation. These losses, such as they are, are inevitable, as certain members of the medical personnel must be near the firing line and within a few miles of the front near which, of course, there are always heavy casualties. The so called danger area extends several miles behind the firing line, and it is necessary for medical officers to be there. It has been said by those anxious to conserve the medical department that its members should not be exposed to danger, but this criticism has never been brought forward by the men themselves or their relatives—mothers, sisters, or wives. It has even been suggested that it might be better to leave the wounded where they fall and save the medical staff, but it would be impossible from the standpoint of humanity alone to leave them lying without any attention until they were able to crawl to some shelter or until death came to them when they might have been saved. What would their relatives say? As it is, everyone knows that the soldiers are receiving the best care on every front and almost everyone realizes that this must fortunately be the case as long as a medical man remains in the armies. As long as the war lasts, sickness, wounds, and death will necessarily occur among the medical personnel as well as among their brother officers and this possibility will be borne cheerfully. In my experience, even young doctors, only qualified for a few months, have the highest possible sense of duty, going under shell fire to bring back the wounded to a place of safety in an expeditious way. There is no excitement to buoy them up, and it requires courage of a high order to attend to the wounded and give orders for their care under heavy shell fire. I have been so impressed by the behavior of young doctors who have gone in without previous training that I think medical training alone wonderfully effective for this duty as it teaches selfreliance and confidence in personal ability, quickness of judgment, and power to apply theory to practice in a case of emergency.

A young medical officer may find himself at a loss in dealing with the men at his command. Even leaving out length of time of service he will have a considerable number who will look to him for guidance, example, and orders, so that a few hints in dealing with this situation may be in order. The men of the United States Army are of the same stuff as those of the British Army, and I have had experience in dealing with these. They have the same ideals and come from the same stock, and I have laid down from my experience a few practical axioms: Never ask a man to go where you would not go yourself. Never ask a man to do what you would not do yourself. Don't lose your temper if you can possibly avoid it. Keep cool and keep cheerful.

It is astonishing to what an extent men place infinite faith in their medical officer; if they see him cool and cheerful, even tempered and efficient, it reassures them inexpressibly. That is an example I have seen many young doctors set. The soldiers are influenced by their officers to an extraordinary degree and the medical officers share this responsibility.

No profession has higher aims than the medical

*An address to the Cornell Medical College faculty and students about to leave for the front. Commencement Exercises, June 14, 1917.

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profession of today, and courage, efficiency, and high ideals inspire and sustain the army at the present time. The life of a medical officer is a varied one and has opportunities for selfexpression and experience which fall to the lot of very few men. This medical work is appreciated to the fullest extent by the officers and men among whom they work, and the effect of the young medical officers in keeping up the courage, spirits, and fighting capacity of the men is enormous, to say nothing of their success in returning to life and to the ranks men who would otherwise never recover. This is realized to the full by the army, both officers and privates.

In the casualty clearing stations and base hospitals one often wishes there were more than twenty-four hours to the day. Anesthetizing, operating, dressing, treating, and curing, the doctor never goes to bed without feeling that he has done a hard day's work. He will see a great amount of terrible suffering, pain, and misery, but he will also see daily instances of nobility, patience under suffering, and selfsacrifice to duty of which he had no previous conception, and he has opportunities for gaining professional knowledge rarely, if ever, known before.

I came to this country with various duties, the foremost being to ask medical assistance for the Allies. There are tens of thousands of wounded calling for help, and a great burden resting on the medical men now in the field. I am deeply grateful for the prompt response to my initial appeal. Six medical units have gone over and are already at work. I take this opportunity to contradict directly the rumor that transports have been sunk, which is quite untrue, or that they were diverted to Mesopotamia, which there never was any hint or intention of doing. I hope that the work so splendidly begun will be continued. I have seen so much pain and suffering that I shudder to think of what will occur if the medical help falls short. Young men can do no nobler work than by joining the army. The first essential at the beginning of a war is realization, both by the nation and by the individual. Great Britain at first was ignorant of her responsibilities, but now she realizes to the full extent and over. Every man who is fighting now is insuring the peace of future generations, and the brightest memory he will be able to look back upon and tell his children will be that he bore his part and bore it well in the time of the trial and sorrow of all civilized nations.

I would like to address a special word to the ladies, the mothers, sisters, wives, and those betrothed who will be left behind. I am and always was a great admirer of the sex, but even in my most impressionable days I never admired women as much as I have in the past three years. Their general attitude has been beyond all praise. They have given up fathers, husbands, sons, and brothers, and the women of France have in addition given up houses and property. I have seen French women harnessed with ropes to the ploughs because the men had gone to war, the horses were taken, and there was no one to help with the work in the fields. I have talked to women who have lost husbands and sons in the war and I have heard no murmur from them, except that they wished they had more to give. I have conceived an admiration for the women of England and France which is beyond expression, and in this I know the women of America will share.

Honors and rewards do not fall to the lot of all, and not of necessity to the lot of those who deserve them; Fortune deals her cards in a very unexpected way, but in looking back on the careers of the best men we have known in the world, we can say with Kipling: "If you can meet with triumph and disaster, and treat those two impostors just the same . . . you are a man." You who will join the army medical corps will find the next few years a very trying and worrying period, heartbreaking and very disappointing at times, but you will eventually find after all that the risk, trouble, and selfsacrifice were worth while; that every man who went over there was really the man to be envied and not the one compelled to stay at home.

THE FUNCTION OF THE MILITARY ORTHOPEDIC HOSPITAL.

By Fred H. Albee, M. D.,
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The data upon which this paper is based were obtained by the writer as the result of an extensive personal study of a score of operative clinics in various war hospitals of France and a careful survey of similar hospital facilities in England and Canada. In the summer of 1916, the writer was invited by the French War Office to visit France to demonstrate his surgical methods in her various war hospitals, and during this visit he was given exceptional and unlimited opportunity for an intimate study of the very problems with which our own Government will be confronted upon the advent of American troops on the firing line in France.

There are many aspects of the situation, of which the following are of vivid interest: 1. Intensive specialization of surgical practice has been developed and stimulated by the present world war. 2. The value of specialized hospitals for the efficient application of special surgical procedures is inestimable. 3. Specialized orthopedic hospitals are absolutely indispensable when it is considered that a large percentage of the base hospital cases which will be returned to the United States for further treatment will be bone, joint, tendon, and nerve injuries. 4. It can readily be appreciated that many of the soldiers suffering from crippling injuries will be permanently debarred from the pursuit of their previous occupations, and unless reeducated and fitted for remunerative work of a new order, will become a burden upon the State. We are therefore face to face with a very serious sociological and economic situation. If we are to discharge our duty as guardians of the public health and follow the standards of foresight and ability displayed by our country's President and by the various arms of our military service, we must intelligently and promptly prepare to restore our crippled American soldiers to the highest degree of efficiency possible.

Closest attention is invited to the following details of the situation: 1, a medical and surgical "clearing house" hospital; 2, a classification of orthopedic conditions as recognized by the Canadian Government; 3, muscular reeducation of the crippled soldier; 4, qualifications of a plant for a military orthopedic hospital; 5, the necessary elements of an ideal orthopedic war hospital; 6, the estate of Mr. Charles D. Freeman at Colonia, N. J., which he has tendered to the United States as an orthopedic war hospital.

A medical and surgical "clearing house" hospital.—The establishment of a medical and surgical clearing house hospital at the chief port of entry to this country and in its metropolis, seems imperative. Here the cases may be sorted out on the basis of their surgical and medical requirements and sent to the special hospital best designed for the treatment of their several needs. This has been arranged for by the Columbia War Hospital.

A classification of orthopedic conditions as recognized by the Canadian Government.—The demand for a purely orthopedic military war hospital is apparent when we consider that from seventy to ninety per cent. of the wounded returning from this war will have orthopedic lesions coming under the following heads, as shown by statistics of the European battlefields, according to the Canadian Military Hospital Commission of Orthopedic Conditions: 1. derangements and disabilities of joints, simple and grave, including ankylosis; 2, deformities and disabilities of feet, such as hallux rigidus, hallux valgus, hammer toes, metatarsalgia, painful heels, and flat and claw feet; 3, malunited and ununited fractures; 4, injuries to ligaments, muscles, and tendons; 5, cases requiring tendon transplantation or other measures for irreparable destruction; 6, nerve injuries complicated by fractures or stiffness of joint; 7, certain complicated gunshot injuries of joints; 8, cases requiring surgical appliances.

This list is the index to the classes of cases which the Canadian Government requires shall be entirely committed to the care of the orthopedic surgeon in the military orthopedic hospitals.

Reeducation of the crippled soldier.—Of equal importance with the physical reconstruction of the soldier's deformities is the vital problem of his reeducation, both psychological and vocational. This aspect of the situation is of paramount importance from a sociological, governmental, and personal standpoint. That the infirm soldier who has been injured while fighting to uphold his country's honor is a dependent upon the State until his remunerative powers are partially or completely restored, is selfevident. The decision as to the particular vocation for which the individual soldier is to be reeducated is of such importance that it should be rendered by a board of examiners—a vocational bureau—after due consideration of the merits of the case.

The peculiar psychological attitude of these injured men requires close attention. A soldier who has been injured while fighting for his country often feels that the burden of his future maintenance and of his dependents will necessarily fall upon the State. From long reflection upon his injuries he has been brought to believe that he is unable to resume his former occupation and he is certain to become introspective, unhappy, and dissatisfied with his lot, and with this mental obliquity is a burden to society. Dependence and idleness are the natural foes of ambition and productive labor. The problem of reeducation is very broad. Its solution involves functional and vocational reeducation, and in the process the distorted psychological state becomes automatically dispelled.

Functional reeducation comprises the restoration to a normal working condition of joints whose movement is restricted by adhesions, of tendons shortened by adaptive contracture, of muscles weakened by atrophy and disuse, the coordination of muscular movements, and of the greatest importance, the use of artificial limbs, particularly complicated artificial hand and fingers. This functional or therapeutic reeducation should be executed by means of hydrotherapy, electricity, and massage. Special apparatus and training by individual instructors to encourage physical movements and mental processes disturbed by injury or shock, are equally necessary. Psychotherapeutics can also be administered during orthopedic convalescence under the direction of a psychologist appointed for the hospital for the treatment of psychoneuroses, hysterical paralyses, tremors, etc.

Having secured the confidence of the soldier and otherwise restored his mental equilibrium, and having trained his reconstructed limbs to the highest point of efficiency, he must now be prepared for some remunerative employment. In determining the occupation for which he is best suited, the mental adaptability and capacity of the individual must be considered, as well as the particular infirmities which he has sustained from injury or disease contracted on the battlefield. As has been said, this question is of such vital importance that it should be decided by a board of examiners after very careful consideration. A vocational bureau working in connection with the hospital may arrange courses leading to remunerative occupations of which the following are examples: Care and operation of automobile; general course in electricity; machine shop practice; telegraphy, traffic orders, train rules; testing of cement and steel; cabinet making, wood turning, construction carpentry; commercial courses, bookkeeping, typewriting, shorthand; courses for those wishing civil service preparation; power machine operating; shoemaking and repairing; drafting, architectural and mechanical; plumbing and steam fitting; pottery making; painting and decorating; lettering; designing and illustrating; clay modeling; steam and gas engines; short courses in chemical analysis; assaying and milling, for former miners especially; poultry farming; flower growing; sanitary inspection; and other courses to be added later.

Qualifications of a plant for a military orthopedic hospital.—To meet the needs of the crippled soldiers adequately, as outlined in the preceding pages, a plant to be suitable for a military orthopedic hospital must possess the following qualifications: It should be located in the country away from the noise and confusion of the city. The country site should,

however, be near an important portal of entry and easy of access by transportation lines from the clearing house hospital of the metropolis, following the precedent of France, England, and Canada. It should be back in the interior far distant from a possible firing line, where the facilities for food supply, sanitation, and transportation are of the best. In the case of our own particular problem in this country, the site should be selected on a large artery of travel, near an important portal of entry from abroad. It should have extensive acreage to allow expansion to meet the complicated requirements of such an institution. Its altitude must be sufficient to insure good drainage. Accessibility to reliable gas, electricity, and water mains is indispensable.

The necessary elements of an ideal orthopedic war hospital.—The patients to be treated in such an institution are necessarily chronic cases, and hence an abundance of fresh air, sunshine, and the quiet of the country is ideal. In a general way, the main building must be spacious, the beds so arranged that each patient receives an adequate amount of air. It must be high studded, with numerous large windows, and be provided with ample veranda space which may be utilized by wheeling chairs or beds from the wards to it. This latter feature is extremely important, because many of these patients have major injuries of the bones or joints and in some instances cannot be moved from their beds for a period of months. The hospital should be thoroughly equipped with modern, up to date materials of every description. It must have a traction fracture table, an electrooperative bone outfit, and various materials for splints, braces, etc., such as plaster of Paris, steel, aluminum, aluminum bronze, Monell metal, etc. It must be supplied with adjustable superstructures to go over the beds, controlled by traction with pulleys, weights, counterweights, etc., in the position of neutral muscle pull for fractures. These have proved of inestimable value in the French war hospitals. The best is one devised by Dr. Joseph Blake, used by him in the American Hospital at Ris-Orangis. An outfit for applying the Carrel-Dakin solution to wounds, and a thoroughly up to date x ray equipment with a suitable localization outfit for the detection of foreign bodies, bullets, shrapnel, etc., are essential. A room should be equipped with Zander's, or other type of apparatus, for the mechanical correction of restricted motion, exercise, etc., in selected cases, and there should be a gymnasium with selected types of apparatus. A large athletic field is a feature which has proved to be important in similar institutions in France and Germany. Here the favorably progressing patient can recover his agility by playing football, handball, throwing the discus, putting the shot, and innumerable other games productive of a *mens sana* as well as a *corpus sanum*.

The reeducational department requires the services of those versed in the art of psychotherapy and muscle training, as well as artisans for each of the special vocational branches already enumerated. A factory for braces and artificial limbs should form an integral part of the institution. In England and Canada attempts were made to have this work done by contract with independent manufacturers. It was soon found, however, that some of these concerns were offering rewards to the soldiers for requesting their particular make of apparatus. The preparation of amputation stumps and the manufacture, application, and use of apparatus and artificial limbs to fit these stumps should all be correlated under the immediate supervision and guidance of the surgeon. It occasionally happens that a stump is too conical or the bone too directly beneath its bearing surface, so that after a patient has worn an artificial limb for some time it may be necessary to perform some plastic procedure to render the apparatus efficient. A splendid artificial limb is useless unless its possessor can use it freely and painlessly.

Stirred by a fine patriotic fervor and actuated by motives of intense loyalty and devotion to their country, Mr. and Mrs. Charles D. Freeman have tendered to the United States Government, through the writer, their magnificent estate in Colonia, N. J. This estate of 800 acres, of easy access to New York by the Pennsylvania Railroad, is situated on high ground, far from the noise of the city, possesses all the above mentioned facilities for orthopedic, vocational, and functional reconstruction and reeducation, and can accommodate from 500 to 2,000 men if necessary. This estate and the details of its transformation into a war hospital will be more fully described and illustrated in an article soon to appear in this Journal.

Deafness of Soldiers.—Reports from war hospitals show that many soldiers suffer from deafness following the shock from high explosives, as well as from direct injuries of the head and the ear and from diseases of the ear due to exposure; and though no enormous number lose all hearing, yet there are many whose hearing in one or both ears is seriously and perhaps permanently impaired. These latter are classified as hard of hearing and discharged or relieved from active duty. Because of the entire absence of external indications of defective hearing the deaf soldier rarely receives the consideration extended to those whose deprivation may actually be far less, yet appears the greater.

Experience proves that the surest and the quickest way to restore these hard of hearing persons to their normal place in any line of human endeavor is to aid them to learn to read the lips as rapidly as possible. The teaching of lip reading to the adult hard of hearing who has a good command of language is a profession promising beneficial results that justify educated hard of hearing women who possess the faculty of imparting information to others in taking the normal training course that will enable them to become proficient teachers of lip reading. This may be a way in which cultured hard of hearing women may be able to serve their country to good purpose. The Volta Bureau, 1601 Thirty-fifth Street, Washington, D. C., will send free literature to all who are inclined to engage in this patriotic service.

It does not teach lip reading, but it will send the names of the nearest teachers qualified to give instructions, and it will assist in the formation of local associations or of a national association to teach lip reading to deaf soldiers.

A SUMMARY OF MEDICOMILITARY FACTS DEVELOPED BY EXPERIENCES ON EUROPEAN BATTLE FRONTS.*

By Henry K. Loew, M. D.,
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In this discussion of medicomilitary topics, the progress made in sanitary science, and kindred subjects that have been developed by experience at the front in Europe, I have made every effort to acquire all information possible from whatever source. I have found it impossible, so numerous were the sources of information, to credit their origin except in a few instances. Suffice it to say that my material has been derived from the writings of original investigators whose information from personal contact and experience at the front is authoritative.

Medical Conditions.

Typhoid fever.—Typhoid fever is an infectious and communicable disease in which the causative agent is a germ, the typhoid bacillus. Infection takes place through the introduction of this bacillus into the alimentary canal. The bacteria abound in the dejecta, the urine and feces, of active cases, while certain individuals, known as carriers, bear and disseminate the germs. They are themselves healthy, go unsuspected, and are sources of grave danger to massed troops. The common modes of transmission of the disease are by ingestion of infected water, milk, and shellfish; flies may carry the infection on the feet and transmit it to food. There are many measures of prevention practised in our army: 1. In active cases drugs that destroy the germ in the urinary bladder and in the intestine are administered. 2. Dejecta from patients is properly disposed of. 3. Quarantine is maintained. 4. Carriers are searched for and segregated until rendered harmless. 5. Danger from flies is avoided by well known measures in and about latrines and by screening of kitchens and mess halls, protection of foods, incineration of refuse and garbage. 6. Modern science has developed the method of artificial immunization of every man in or associated with the army by the exhibition of typhoid vaccine, the greatest boon to armies yet discovered, to which alone may be ascribed the comparative freedom of the European troops from this scourge, only those regions proverbially deficient in sanitary science, the Balkans, Macedonia, and Albania, having suffered. The American Red Cross Sanitary Commission by the utilization of this method early stamped out the disease in these places.

Paratyphoid fever occurs in two forms, designated A and B to facilitate description. They are so closely allied to typhoid and so similar to one another that differentiation can only be made microscopically. Generally speaking, it is less fatal than typhoid. Preventive measures are the same as those for typhoid, except that a specific vaccine combining the two forms is used to immunize against it. Experimentation is now being carried on in our army laboratories to perfect a mixed product, the administration of which will protect against the three diseases, a method being utilized abroad.

Typhus fever.—Throughout the ages typhus fever has been a concomitant of war. It is extremely fatal and rapid in its spread, and already on the Serbian front it has caused more than 135,000 deaths and is epidemic in Montenegro and endemic in Galicia and the Balkan States. The reason of its coincidence with war, science has but recently disclosed. Typhus is a disease of filth. Hurley says: "It thrives in times of squalor, congestion, confusion, and despair." The disease should not become a menace to the American armies, and should it gain a foothold among us, the onus of the most inexcusable guilt will be deserved. An absolute preventive is known beyond peradventure; it is transmitted only through the medium of the louse and habits of cleanliness instilled into our men, both as to person and raiment, insistence of organization commanders upon frequent bathing and the use of insecticides will positively prevent typhus. Of these the most effective, gasoline, benzine, turpentine, and kerosene, will doubtless be readily accessible even at the front. That constant attention to this detail is essential is proved by the statement of Peacock, that "ninety-five per cent. of the men among English troops examined in 1916 were found to be infested with lice." A further proof of the importance attached to this menace in armies is the development of mobile bathing and disinfectant units sent as near as possible to the front which the men are privileged or compelled to utilize while their apparel is being subjected to sterilization. Delousing stations, besides, more or less permanent, are established.

Smallpox.—The discovery of Jenner in 1796 gave to the world the first vaccine, the universal use of which has rendered practically harmless one of the great menaces to massed troops. The only locality in which this disease has been epidemic in the war zone is Galicia among the unvaccinated citizenry, yet to prove the efficacy of vaccination, it is reliably reported that the perfectly immunized German and Austrian troops during their occupancy of this infected territory, suffered but little from smallpox. American soldiers are or will be adequately protected, the authorities already having taken especial cognizance of its importance, and issued orders accordingly.

Cholera.—The original home of cholera is in the lowlands of India. Since the first authentic report of the disease in 1817, according to Osler, it has repeatedly encircled the globe, few sections of the earth and no European country having escaped at one time or another visitations of this dread scourge in which over half of its victims succumb. Its cause is a definite specific organism, and the mode of conveyance, as in typhoid, is by ingestion of infected foods and water, the infection being carried long distances solely through the medium of man. Osler has ascribed the spread of the two diseases alliteratively to food, fingers, and flies. Forchheimer divides the prophylaxis against it into communal and individual measures, the two being intimately bound together, however. With pure water and food cholera cannot exist, and since the germ is peculiarly unresistant to heat, the boiling of water, cooking of foods, protection of both from subsequent contam-

*Lecture delivered to line officers at Fort Brown, Texas.

ination by handling and flies, with sterilization of table utensils, will afford adequate protection in the presence of the disease. I quote a point mentioned by Forchheimer, because it seems important in dealing with large bodies of men and is a good, rational, and sufficient reason for adopting prohibition measures in the field in contradistinction to the sentimental ones advanced by would be reformers: "The use of alcoholic beverages is to be especially condemned, for subacute and chronic gastritis (inflammation of the stomach), whether due to this or other causes, is most certainly an open sesame to the cholera vibrio."

The following paragraph (1) is interesting as showing both the occurrence of cholera in Germany during this war and the prompt and heroic measures adopted to stamp it out: "On cholera appearing in M——— a hospital for cholera cases and suspects was established, the streets where cases occurred were isolated, intercourse between citizens and troops inhibited, streets and yards were sprayed, etc., etc. Prophylactic inoculation was begun on the day following the appearance of the disease and the second dose had been given to all by the ninth day" The last sentence may cause the soldier to shudder in anticipation of still another series of "shots in the arm" as protection against cholera, to which he will undoubtedly be subjected if it is necessary.

Dysentery.—Those who served during the Spanish-American War will recall the ravages made by diarrheal diseases among the troops, even those encamped in our own cities. What has been said of typhoid, the paratyphoids, and cholera, can be applied to this class of disease with equal force. In enforcing prophylactic measures it might be well to emphasize that no less stringent measures should be adopted. Among the diarrheas suffered by the English troops, certain of the cases were designated "sand diarrhea"; they followed sandstorms and were ascribed to the irritation of the bowels by the sand, or to the dissemination of the germs by the winds. In either case it would seem that protection of foods and utilization of, perhaps, the gas mask while such storms raged would prevent the occurrence of these cases.

Tuberculosis.—The white plague has so long been a subject of universal dread and popular discussion that I can add little to the information already well known of the measures advocated for its prevention, but because of the importance it is assuming as a decimator of men in the trenches, it is essential to emphasize certain rules to prevent its further inroads. "Of sixty British soldiers discharged from a London hospital as no longer fit for service, twenty-two were marked down by the examining medical board as suffering from chronic tuberculosis." All evidence tended to prove that these men had been lung sound when they enlisted. The British experts who canvassed the subject concluded: "Modern trench warfare, with its terrible exposure to extremes of heat and cold, under the most unhealthy conditions, is bound to cause an excess of pulmonary complaints among men not up to the strain" (2). The last point incidentally is an eloquent argument in favor of adequate physical training and hardening of the men.

I have followed with some interest in the daily press in recent months articles alleging an alarming increase of consumption in France. Our enemies have even been accused of having barbarously inoculated noncombatants in captured territory, so great was the number of victims of the disease discovered in regions recently vacated by them on their retreat. The tremendous stress of work incident to the recruiting of large numbers of men hurriedly will inevitably result in the enlistment of many incipient and latent cases of phthisis, each one of whom under the circumstances of trench life will become a potential danger to the men with whom they come in contact. Considerable time has been spent in trying to determine if these men are themselves benefited or injured by their military service. I believe that the question would be influenced by the conditions of such service; however, the real importance of their exclusion lies in the avoidance of the menace they constitute to their trench mates. So universal is the disease that it is safe and fair to assume that each organization contains one or more tuberculosis carriers; such measures as the prohibition of the use of the common drinking cup and the interchange of utensils should be rigidly observed, and rules against promiscuous expectoration, particularly in the confined areas of the trenches, actively enforced. Men observed to have a chronic cough or to be visibly losing in weight or strength, those who repeatedly complain of afternoon fever, or whose cheeks are characterized by a hectic flush, should be sent to the rear to be placed under observation of the surgeon. If company officers in constant and intimate contact with their men could acquire the habit of zealous observation of them, they would greatly increase the efficiency of their organizations as fighting units: no easy task, I admit, but perhaps worth a thought.

Malaria, yellow fever, and dengue.—A volume might be written on the first; the latter two are not so important, for their rarity in European countries renders unlikely any widespread epidemic of either among troops transported to Europe. Malaria is transmitted from human carriers through the intermediary host, the Anopheles mosquito. Sanitation having for its object the eradication of breeding places by drainage, oiling, avoidance of improper camp sites, protection against mosquito bites by the use of bars and nets, and the periodical exhibition of quinine as a prophylactic for the uninfected and a curative agent for the carriers will prevent its occurrence.

Venereal disease.—I do not believe that measures applied to individuals in our army to limit this class of disease can be improved. The regulations governing venereal prophylaxis are as adequate as present day knowledge can dictate; every effort is made to enforce them. Any régime, however, can be but relatively effective. To further safeguard our men stringent regulation of prostitution in the neighborhood of camps and control of camp followers must be inaugurated or promiscuous intercourse between soldiery and citizenry controlled, if, in view of reports of the alarming increase of venereal disease in Europe, we are to profit by the experience of the allied armies.

Bubonic plague.—It is desirable to call attention to the possibility, not the probability, of its introduction through the agency of infected flea infested rats. It is the function of sanitary officers to guard against such a contingency.

Insanity and nervous diseases.—These disturbances have been not uncommon among the troops at the front. If each case were subjected to careful analysis, it would doubtless be shown that all occurred in individuals who had previously manifested, if not active symptoms, at least stigmata of mental or nervous disorders. It is easily conceivable, however, that men subjected to the alternate excitement of battle and restraint of trench life, the anxiety, uncertainty, and physical stress incident to war, under more or less unhealthy physical conditions, might succumb. I am impelled to advocate in order to preserve the integrity of the mind that the men be provided with a sufficient quota of work, a goodly measure of rest, respite from trench duty, and recreation.

SURGICAL CONDITIONS.

Poison gases.—Although condemned by the Hague Convention in 1899 as a barbarous agent in warfare, these tactics, fiendishly revived by the Germans, deserve more than passing consideration. I can readily conceive situations in which first aid in cases of asphyxiation may devolve upon the line officer; a condition in which prompt succor may mean life or death, recovery or a future of invalidism, where he may be called upon actually to administer early treatment, or even carry the case on to its termination. From exhaustive analyses and numerous clinical observations, Kruglesky in accord with others has come to the conclusion that the gases used in warfare at present are mainly chlorine and bromine, analogous elements, the former existing as a greenish yellow gas, the latter as a dark red liquid which vaporizes at ordinary temperatures. Both are pungent, irritating, suffocating, and heavier than air. The symptoms produced by their inhalation are premonitory: detection of the peculiar odor, burning sensations in the eyes, irritation of the mucous membranes, painful cough, sensation of oppression, and palpitation of the heart. Following these are the symptoms of asphyxia: difficult breathing, restlessness, air hunger, dizziness, cyanosis, unconsciousness, edema of the lungs, or the filling of the air paces with fluid, manifested by a rattling sound with each inspiration and an abundant frothy expectoration. Removing the victim from the environment of the vitiated atmosphere and supplying oxygen, recovery might be expected, depending, of course, upon how profoundly he had been affected. According to the experience of many, the patient often feels able to return to duty several hours later; however, he may suddenly again develop serious pulmonary edema. Later, what may be described as terminal symptoms occur, lesions in the lungs, bronchitis, congestion of the lungs, bronchopneumonia, even gangrene, in association with failure of the general health and a variety of complications. The only prophylactic is the use of the gas mask or the respirator. The gas mask consists in its simplest form of a perforated covering for the nose and mouth, held tightly to the face with appropriate straps. A more effective type is like a helmet and contains gauze saturated with the chemical antidote for the gas, sodium hypochloride with glycerin to maintain the moisture of the material. As protection from the irritating properties of the gas to the eyes, goggles are worn or a window is provided. The respirator is a more complicated apparatus, similar to that used in mines which occludes the vitiated air and substitutes oxygen, derived from a central supply or individual tanks. The immediate treatment must be applied without delay: Removal to a pure atmosphere, application of artificial respiration by the Schaefer method, remembering that the poison gas is heavier than air and that effort to rid the lungs of it, as of water in cases of drowning, must be made. This accomplished, I should say that if there be any efficacy in the pulmotor, this would be an ideal opportunity to demonstrate its usefulness. Vomiting should be induced by any method not too depressing. Immediate bleeding to prevent the edema of the lungs is advocated very highly by Lion, and is an operation requiring so little technical skill that in an emergency I should not hesitate to recommend its performance by any intelligent layman. It is performed by ligating above the bend of the elbow, painting the site of the proposed stab with iodine, sterilizing a sharp instrument by flaming, boiling, or immersion in an antiseptic, and nicking one of the prominent veins of the arm. After about a teacupful of blood has been removed, the bleeding can be easily controlled by the application of a fairly tight first aid dressing.

Trench foot.—The causative factors of the condition that has come to be known as trench foot, to judge by the varied expressions of opinion of the authorities, have not been definitely determined. A letter from Paris quotes a paper by Doctor Raymond and Doctor Parisot on Freezing of the Feet, Commonly Called Trench Foot, a title which seems to class it as a frostbite, while a London letter written in the same year, 1916, stressed the point made by Leonard Hill in a lecture on Science of Clothing and Prevention of Trench Foot that the condition was not, *per se*, caused by cold. He said it "was induced not by the cooling of the surface alone but by the loss of vitality of the entire limb through water soaking into the tissues." Yet in May of the same year apparently convincing evidence proved the condition to be caused by a fungus or mould which had been found in the soil, straw, and manure in the trenches and was recovered from the lesions. It thrived best at a low temperature and with moisture, and was introduced through excoriations or abrasions of the unbroken but macerated skin into the waterlogged tissues. I would be inclined to combine as essential causative factors all of the foregoing, taking into account the fact that the low degree of vitality induced by inactivity, cold, and water soaking would favor infection. The disease as described is an inflammation of the peripheral nerves, the local symptoms, briefly, being pain and swelling, or edema, the occurrence of blebs or blisters, eschars, and gangrene. The condition does not necessarily remain a local one, but causes systemic symptoms, septicemia, and serious end results.

Methods of prevention are very important. The first is the matter of foot gear—a detail that the individual organization commanders can best oversee. It is recommended that the socks in use in the American army be discarded, and the foot covering used by the Italians substituted, wrappings of squares of fabrics soaked in grease. Waller and Rideal, of the Royal Army Medical Corps, recommend salted lard; other experts advocate dipping the fabric in melted paraffin; still another favors the adoption of Labradorian footgear, which consists of two or three layers of elastic, watertight skins. As the result of the experience of these men, I should be inclined to combine the good qualities of all and should advocate the use of a wader sufficiently large to admit the wearing of three pairs of socks—an inner, light pair soaked in a salted ointment or other unguent, and two heavy woolen outer pairs dipped separately in paraffin. It is essential that the circulation be unimpeded; hence leggins or shoe laces should be loosened frequently. If our army adopts the spiral woven cloth puttee, it should be remembered that they are said to shrink one fifth their length.

The second important preventive measure is care of the feet. Scrupulous cleanliness, attention to treatment of even insignificant sores and abrasions, and anointment with grease of legs and feet before beginning a tour of duty in the trenches should be observed. An ointment containing camphor and boracic acid that has proved most efficacious in the treatment of trench foot should be used for this purpose, as "foot powder" now is in our army.

Shell shock.—Shell shock is a complex affection of the nervous system caused by the air concussion of high explosive shells bursting in proximity to men in the trenches. It occurs without actual trauma and would seem to be the result of molecular changes in the brain and fluids produced by the powerful detonations. Neurasthenia and hypochondriasis, spasms or partial paralyses, a dazed condition or temporary loss of consciousness, with tricks played upon the special senses, most commonly the sight or speech, result.

An important point in this condition is that it subsides after a variable period of time, ranging from hours to generally a few days, except in occasional cases of long standing, with no further treatment than complete rest and quiet, and that, as emphasized by von Sarbo, interference, as by unnecessarily frequent examinations, treatments, and I would add, the manifestation of too much sympathy, is harmful and liable to breed a superimposed hysteria.

Wounds.—There can be said to be no prophylaxis against wounds from a medical standpoint. Measures to safeguard the soldier being purely military, the newly introduced steel helmet, steel goggles, crawlers, armor plate however utilized, come within the province of the military authority rather than the medical. I will not classify wounds; there is little difference in the principles involved in first aid treatment, however they may have been inflicted, whether by fragment of shell, shrapnel, rifle or pistol bullet, bayonet, or sabre. We can as well, then, treat the subject in general, studying particularly, however, the complications most frequently met on the European fields of battle and the measures developed for their prevention. The indications for the application of first aid dressings are: 1, avoidance of soiling of the wound; 2, control of hemorrhage; 3, prevention of surgical shock. To put the cart before the horse, I propose to detail first the complications being met abroad for the purpose of emphasizing the importance of surgical cleanliness in handling them and the rôle played by those who apply the first aid dressing. In discussing this, I shall quote from the report of an extemporaneous lecture delivered by the incomparable Carrel, recently at the Army Medical School. Infection, as applied here, means the introduction of disease producing bacteria, i. e., those germs that produce suppuration, gas gangrene, and tetanus, the three wound complications that have been responsible for the high mortality and unfavorable results reported from the European battle fronts during the first years of the war. The reasons for the enormous incidence of infection, practically 100 per cent., should be intensely interesting. Consider that the areas over which the battles of the great war are being fought were previously thickly inhabited; it might be expressed as an axiom that man and disease germs coexist on terms of unfortunate intimacy. The lands over which open battle is being waged have been tilled for centuries and kept productive by the constant use of fertilizer. They are now cut up by myriads of trenches, and rain is frequent. There are thus formed, adding warmth, the most favorable conditions for the luxuriant propagation of bacteria. Environment, then, is one important factor in the occurrence of infection. Other causes are: 1, the skin of the men who are wounded is dirty; 2, their clothes are contaminated, as has been actually demonstrated by bacteriological experiment, by sweat, the germ laden mud of trenches, and often human filth; 3, missiles carry into the wounds foreign material, dirt, splinters of wood, bits of clothing, etc.; 4, the character of the injuries, those caused by shell and shrapnel contusions and lacerations, result in lessened resistance because of the lowered vitality of the tissues; 5, among the common microbes encountered are those known as anaerobes that thrive in the absence of air. Penetrating wounds or those filled with clotted blood afford ideal conditions for their growth, as do ragged wounds with deep recesses.

All familiar with infected wounds, perhaps by painful experience, would recognize ordinary pus, and are acquainted with the symptoms produced by the presence of the common germs of suppuration—pain, swelling, heat, and redness. The seriousness of the extension of the process is manifested by the appearance of red streaks leading to the nearby glands or "kernels." All, also, know the danger of general blood poisoning. To prevent this train of symptoms, leading often to a fatal termination, the careful application of first aid is necessary.

In gas bacillus infection the germ, so states Surgeon Fauntleroy, a military observer, "has seemed to be omnipresent." Its mere presence in a wound does not necessarily produce its characteristic symptoms; certain of the conditions related above must

coexist, for it belongs to the class of anaerobic bacteria. Under favorable circumstances, however, it becomes a virulent poison, producing its peculiar manifestations with alarming rapidity. A disgusting odor develops, to which nurses at the front have become acutely sensitive, calling it "the death smell." The tissues become filled with gas so that they crackle on pressure. This condition, at first local, extends, gangrene and a general systemic poisoning supervene, and death may result within a comparatively few hours, or at least extensive operative interference may be required to save life, after perhaps insignificant wounds or minor injuries.

Tetanus, or lockjaw, is caused by a specific microbe that enters the body through the wound. This germ, like the preceding, is an anaerobe and to grow and flourish must find lodgment under circumstances that deprive it of air. Punctured wounds, wounds that become filled with clots, or jagged ones with deep recesses are ideal. Parenthetically, let me here state that the popular fear of the "rusty nail" in connection with lockjaw is unfounded as far as the rust is concerned, but justified because of the character of wound it produces and the likelihood of its being infected with tetanus. The disease develops after a variable period ranging from a week or less to several weeks; it causes no manifestations at the seat of inoculation, but becomes general through the dissemination of the toxins through the nervous system, and produces characteristic convulsions. From the fact that these begin in the muscles of the jaw and prevent opening of the mandible, the popular name, lockjaw, has been derived. The disease, particularly in its acute form, is very fatal and is always painful and superlatively distressing to victim, friends, and attendants. Treatment of wounds resolves itself into, 1, general prophylaxis; 2, the principles involved in the application of first aid; 3, special prophylactic measures for the prevention of the complications noted above. Under general prophylaxis is included cleanliness of person and clothing. The practice of the Japanese during the Russo-Japanese War, of causing each soldier to take a full bath before going into action, proved wonderfully effective in limiting infection. The entire change into clean raiment, under similar circumstances, is of [illegible] least equal importance. In connection with this I regret that I have been unable to obtain the details of a method of treatment of the clothing of soldiers, originated and advocated by a woman doctor in France, the object of which is to sterilize them by soaking in an antiseptic solution. Experimentation has proved that they remain germ free for several weeks.

The trench is the ultimate source of the great percentage of wound complications. They should be kept dry and the men should be made to understand that the labor incident to doing this is actuated by the law of selfpreservation. Lining trenches as a measure of comfort and safety is well worth the trouble and expense entailed. Finally with some hesitancy I propose to advance what I believe is a new idea, the issue of a waterproof trench suit, fashioned after a child's sleeping garment, with closed feet and gloves, made of a light, rubberized material, fitting tightly around the neck with a bellows tongue, and to be worn as an overall. It would be discarded immediately before leaving the trench and donned on entering it. Experimentation with such a garment would determine whether the deprivation of air to so much of the body might not prove too great a discomfort. There might, too, be economic reasons for not adopting it.

The treatment of wounds on the field, not necessarily by the trained men of the medical corps, but by the fighting men, I have suggested, may determine the outcome of the case. As officers have already been familiarized with the indications for first aid, have been drilled in the use of the tourniquet for the control of hemorrhage, and know about the use of stimulants, the benefits of the action of warmth and posture to combat surgical shock, and have been drilled in bandaging, immobilization of fractures, etc., I shall only call attention to a few important factors. Success in the treatment of wounds received in battle is in direct proportion to the rapidity of evacuation of the wounded to the rear; the shorter the time that elapses between the reception of a wound and the application of the first emergency dressing and transfer through the various sanitary units to the base, the better the chances for rapid and perfect recovery. The dressing of wounds should be attended with as little discomfort to the patient as possible. This can be accomplished by locating the wound without undue movement of the victim, exposing it fully to view by ripping or cutting the clothes covering it, and by having the dressings ready and accessible. Iodine is the antiseptic par excellence. Wounds must not be handled nor should any extraneous substance be allowed to even touch them. Dressings should be applied as lightly as possible; they should be sufficiently voluminous to soak up the discharges and entirely cover the wounded area.

Special prophylaxis concerns the measures for the prevention of gas gangrene and tetanus. It must be recalled that the germs of both require deprivation of air for their growth, therefore the access of air will prevent the development of either. To this end wounds should be opened freely and no dressing permitted to remain after it had become so permeated with clotted blood that air was excluded. This is a factor of such importance that in my opinion when necessary, as on occasions where the evacuation of the wounded is delayed, anyone should assume the responsibility of redressing such a case. For the prevention of tetanus there is an antitoxin of proved utility. Experience has taught, however, that the earlier its exhibition, the more certain its efficacy; it should be given, if not on, at least immediately after, removal from the battlefield, not to selected ones, but to every wounded man. The technic is simple and could be easily acquired by anyone.

Before concluding this résumé I am going to describe briefly the essentials of the method of treatment that has been developed in France to combat infection that has distinguished the battle wounds and has been the cause of the high rate of mortality. It was evolved as the result of the untiring labors of Doctor Carrel and Doctor Dakin. Doctor Carrel concluded that some bactericide must be devised that would kill the microbes without seriously injuring

normal tissues. Experimentation by Dakin discovered a number of substances which, being but slightly caustic for the tissues, could be used in a wound in a sufficiently strong concentration and during the time necessary to bring about sterilization. Of these, the simplest, an alkali free, 0.5 per cent. sodium hypochlorite, was selected. The technic for its use consists in opening the wound widely, removing dead tissue and foreign bodies, and inserting small perforated rubber tubes in every recess of the wound. Every two hours the wound is flushed with the Dakin fluid, this being continued until all microbes have disappeared, as proved by repeated bacteriological examinations of the discharges. When both the clinical and bacteriological examinations prove the wound sterile, in from forty-eight hours for small wounds to six to ten days for extensive ones, the edges are stitched, and healing takes place in a few days.

REFERENCES.

1. *Military Surgeon*, August, 1916. 2. *Army and Navy Journal*, April 29, 1917.

DISTAL OSTEOPOROSIS OF THE UPPER EXTREMITY.

Its Cause and the Influence of Position.

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During my four months' service in Hospital B of the American Ambulance Hospital of Paris, at Juilly, S. et M., France, in the summer of 1916, our staff, of whom Dr. R. C. Bryan, of Richmond, Va., was chief, was greatly concerned about the extensive decalcification which followed all severe injuries of the arm, particularly those below the elbow. This decalcification extended too far beyond the acutely inflamed area to be explained by simple inflammatory rarefaction and, with the accompanying changes in the soft structures, so grave was the ultimate result that I cannot too earnestly emphasize the seriousness of the condition. The hand became rigid, deformed, and practically useless.

Our interest once aroused, there was no single problem upon which more thought was spent nor one in which we felt more helpless, for it appeared in case after case in spite of the fact that we employed all standard measures in the treatment of these patients. The patients were all men in their physical prime, their ages ranging from twenty to the early thirties, and while we were not equipped to make Wassermann tests, the absence of all other forms of venereal disease among our patients and consistent presence of the process with this type of injury reasonably excluded syphilis as a possible cause.

A general description of such a case is as follows: On admission about a week or ten days after the occurrence of the injury the case presented a large septic perforating wound in the forearm or wrist, involving the bone structures as a compound fracture. There was an extensive and diffuse cellulitis and edema, the latter showing particularly beyond the distal side of the wound. The hand was enormously swollen and bluish in color; the fingers were conical in shape. The large blue hand was typical at the stage. Decalcification of the bones of the hand and wrist was discernible about three weeks from the time of injury, manifesting itself first in the carpal and about the epiphysis of the metacarpal and phalangeal bones. The ends of the radius and ulna were also involved if they lay within the inflammatory zone or if the wound was situated in the forearm. The rarefying process continued, the bones becoming more and more ghostlike in appearance in successive x ray studies, the shafts also showing a like involvement, but more slowly. The infection was usually of mixed form, staphylococci predominating. All structures of the part transversely were affected by the acute inflammation—muscles, tendons, nerves, and bones.

When the acute symptoms had subsided, which was usually after some weeks, and the accompanying edema had largely disappeared, the hand appeared long and tapering. The nails were thick and horny, their convexity, both longitudinal and transverse, increased, and they seemed closer to the ends of the fingers on account of the atrophied finger pads. The joints showed various degrees of enlargement and rigidity owing to the thickening of the joint ligaments and changing of the serous exudate within the joints and tendon sheaths to a plastic form. When the sheath had been eroded, the tendon became fixed to the surrounding scar tissue. The temperature of the hand was low and its appearance splotched. Beside the vasomotor disturbances demonstrated, there were numbness, tingling, acute pain, and hyperesthesia in areas; motor and sensory paralysis was present if division of the nerve had taken place through the injury or subsequent sloughing, or if the nerve was included in scar tissue growth. Bony deformity often persisted owing to inability in some cases to control the position of the fragments because of the cellulitis and swelling or because of the essential care of the infected wound. Growth of involucrum and atrophy of the soft structures increased the deformity.

In the worst cases the hand was useless or at best capable of only limited function, the wrist and fingers being stiff and more or less rigid. Massage and baking were resorted to as early as seemed advisable, but gave little and very slow improvement. Forced movements could not be employed owing to danger of rupturing encapsulated infected foci and of causing a return of the acute suppurative process. All the cases of this general character showed the same changes varying mostly in degree. While a large part of the changes and impairment of function was due to the destructive action of the injury and infection on the structures within the wounded and acutely involved area, the changes beyond, both in bone and soft tissues, yield tangible evidence of more subtle factors which were equally if not even more responsible for the unhappy results.

In regard to the early treatment the wound or wounds discharging large quantities of pus, were kept open and drained with tubes or gauze wicks and dressed once or twice daily. The more severe cases were kept in a continuous bath of bichloride

or magnesium sulphate. When permissible, the latter patients, in order that they should not be confined indoors, were given large dressings saturated with one of the above solutions and a suitable splint for mobilization, and the arm was kept in a sling. Opening and free drainage of pus cavities were carefully observed. The relief of the acute symptoms was very slow, cellulitis and marked swelling of the injured area persisting for several weeks, or until the infected osteitis within had been overcome. The edema of the extremity kept pace with the condition above it, and with its gradual subsidence the hand appeared as already described.

From the twenty-seven cases of osteoporosis of the hand and wrist studied, several have been selected which show most typically the changes at different stages, and present characteristics which have a distinct bearing on different phases of the bone salts is due to cellular activity produced directly by the causative agent, traumatism, infection, etc., and is immediately surrounded by other involved tissues showing their characteristic inflammatory changes which become less marked as the tissues are at a greater distance from the centre of infection. This process is distinctly different from the general diffuse bone softening due to disturbances in metabolism, as in rickets, where the fault lies in the nourishment furnished by the blood.

The decalcification seen in our cases was distant to the acutely inflamed area and consequently not produced by its active irritants, and was local in extent, only involving the bones between the wound and the extremity, but diffuse and uniform in character, involving all these distal and proximal bones about equally. These characteristics indicate a local form of metabolic disturbance such as could be pro-

FIG. 1.—Case I, F. G., age 21. Wound in carpal and metacarpal region. A, two weeks after injury, showing extreme swelling of the soft tissues, and injury. B, ten weeks; decalcification advanced, loss of outline of the carpal and ends of the metacarpal bones. C, twenty-four weeks; rarefaction markedly advanced in the metacarpal and phalangeal bones.

process. Summarizing the features presented in the illustrations: 1. The extreme swelling of the soft tissues is outlined in the early plates of all these cases. 2. The decalcification lies within the zone of inflammatory reaction and beyond. 3. The earliest and most notable changes are seen in the cancellous portion of the bones which are richer in blood supply and normally contain the greatest activity. 4. The relatively normal density of the small sequestrum in Case IV, compared to that of the distant osteoporosis, shows that the latter is the result of the activity of living cellular tissue. 5. Osteoporosis may exist without the presence of infection as demonstrated in Case V of simple fracture with constricting bandage. 6. Absence of function as shown in Case VI does not produce the same decalcification which characterized the cases under consideration.

The causes of a local, progressive decalcification are inflammation and tumor. The latter need not be discussed, as the condition under consideration yielded no signs of neoplastic growth nor did inquiries bring to light any case showing such an ultimate result. In the inflammatory condition, loss of duced by stagnant blood supply in the part beyond the wound, a condition whose presence was fully borne out by the external appearance, notably the enormously swollen blue hand. The effect of such stagnation would be to deprive the tissues of their usual nourishment and means of growth and repair and to stimulate metabolic activity through the irritation caused by the accumulated waste from the living and dead tissues. The factors which produced this relative stasis are constriction of the veins due to the marked swelling of the soft tissues beneath the tense skin in the injured part and the effects of gravity upon the obstructed flow of blood. The rarefaction then is directly the result of these mechanical factors and quite distinct from, and only secondarily due to, the inflammatory process. So closely has the influence of gravity in effecting the condition been observed in this study that, following the explanation of the process which occurred when the part was kept in a pendent position, a brief discussion of its inverted action, when the part is kept elevated, will be given to demonstrate its therapeutic importance in the care of cases of this character.

A brief account of the circulatory phenomena

may be of value. Circulation of the blood is maintained by the inequality of pressure in the vascular system created by the heart pulsations. The greater pressure exists in the arterial system so that a direct flow toward the venous channels from the arteries

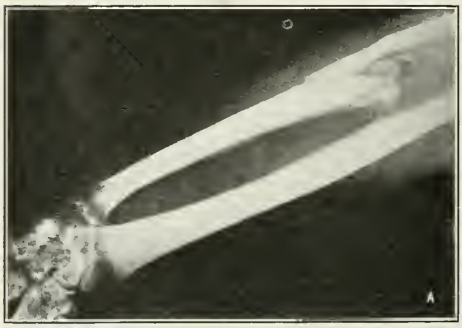

Fig. 2.—Case II, F. R., aged 29 years. A, two weeks; compound fracture of the ulna in upper third, distinct rarefaction of the carpal bones and lower ends of the radius and ulna.

naturally follows, seeking, as it were, to equalize the pressure in the two structures. This cannot take place as long as the heart's action continues. The pressure is decreased as the stream advances because of the increased total volume of the innumerable channels into which it passes. The propulsive force is diminished by the resistance encountered in the bifurcations, the more extensive peripheral friction, and the tortuosity of the channels; the velocity is likewise affected, but both are sustained in part by the pulsations which extend through the arteries to the capillaries.

Gravity has a marked influence upon velocity and propulsive force according to the degree as afforded by position in which the bloodstream flows to join with or oppose this influence; velocity and pressure are increased when it flows in the direction of gravity, and decreased when the stream takes an upward course. This applies to both venous and arterial systems.

Inflammation yields well known circulatory changes illustrated in the diagram, Fig. 7.

Section A presents in the vast majority of these cases a perforating wound with more or less extensive comminution of the bone and sepsis deeply established. Marked active hyperemia, acute cellulitis with its rapid hyperplasia and cellular swelling, migration of blood cells and plasma facilitated by the thinned and distended capillary walls, and engorgement of lymph channels and intercellular spaces, all act to distend the skin covering and, under the limiting influence of the latter, to raise the internal pressure upon all these structures. This greatly increased internal pressure so clearly demonstrated by the tenseness of the skin, causes the swollen tissue to encroach upon the space occupied by the venous channels of the part because of their collapsible walls and the relatively negative pressure within them, thereby interfering with the passage of venous blood from the extremity.

Dilatation of the small arteries and arterioles is acomplished by the vasomotor irritation and deflects an increased flow of arterial blood with greater pressure and propelling force into their capillaries at the expense of the flow to the extremity. This greater power given to the stream in the inflamed area yields to it greater advantage over the stream from below to pass into constricted veins, thus further blocking the latter. Gravity inhibits lymphatic drainage of this part and promotes gravitation of free intercellular material toward the extremity.

Fig. 2. (*Continued*).—Case II, B, twelve weeks; comparative density the bones in the affected and unaffected wrist. C, twenty-two weeks; advanced decalcification of the carpal and ends of the metacarpal and phalangeal bones.

In section B, the bloodstream lessened in pressure and power, after passing through the capillaries and collecting in the veins, advances to the obstructed part. Not having sufficient pressure to overcome that which constricts the veins, only that part of this stream may proceed to which available

space or passage remains, such as is afforded between the diminished lumen and space occupied by the stronger streams from section A. Even this passage will become closed to the distal return under the increased outside pressure at A, unless the pressure of this stream is increased to overcome it. To accomplish this, an engorgement of the blood-vessels of the extremity, beginning in the veins, must be effected until throughout the vascular channels the pressure is sufficiently raised. Under this pressure the veins and capillaries become greatly distended, exaggerated by the hydrostatic pressure of the fluid blood. Permeability of the vessel walls, especially to plasma, increasing with the distention, acts against elevation of pressure by escape of the blood constituents into surrounding tissues. They become edematous, increasing their internal pressure under the overlying skin. Ultimately the pressure within and without the vascular channels of the extremity equalizes the pressure of the structures constricting the veins in the wounded area. Into the vascular channels so markedly distended and engorged, enters a somewhat diminished supply of arterial blood which moves sluggishly through the widely dilated vessels, propelling the almost stagnant blood before it in the same leisurely manner. The tissues, both bone and soft structures, as well as the overstrained vessels themselves, are deprived of their normal nourishment and continuously bathe in their own waste and toxic products gravitating from the septic area. The result of these changes would be an enormously swollen, edematous, and bluish hand, such as our patients presented.

The condition is distinctly one of venous obstruction with hypostasis. Section C would probably show no greater circulatory changes than a slight acceleration owing to the lowered venous pressure due to the constriction below. In the position just considered, it will be noted that gravity acts with the stronger arterial stream and opposes the weaker venous stream which is dependent for its movement upon the former, especially when the part is at rest. Gravity exerts a backward pressure on any accumulation of blood which may be present in the venous side when the part is pendent. Contrast this with the effects when the part is elevated. Gravity which opposes the arterial stream furnishes a correspondingly helpful force upon the return flow, and accumulation taking place in the venous channels, instead of being pulled backward, will be pulled onward. Its further helpful influences are considered more in detail with Fig. 8, representing the arm elevated.

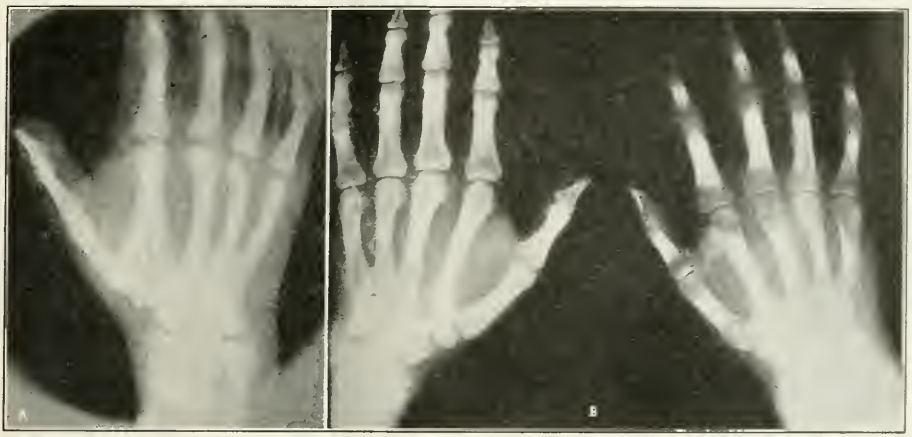

FIG. 3.—Case III, E. R., aged 26 years. Wound of carpal and metacarpal region. A, one week, showing unaffected bone density. B, sixteen weeks, comparison of the two hands.

Section A shows the wounded and infected area, swollen and hyperemic. The same cellulitis, hyperplasia, swelling, and migration of blood constituents takes place as in the former description; the resultant swelling, however, is less on account of the influence of gravity facilitating lymphatic drainage and gravitation of the free blood plasma in the tissues toward the shoulder. Control of the swelling in the inflamed area prevents the venous constriction. The action of gravity upon the vascular system, directly,

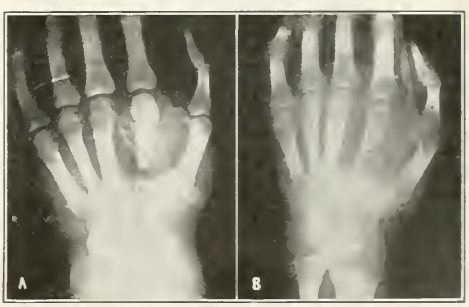

FIG. 4. Case IV, P. D., aged 42 years. A, three weeks; marked swelling outlined and mild rarefaction. B, thirteen weeks; well advanced rarefaction, note density of fragment of dead bone at the proximal end of the second metacarpal.

is a decrease of the pressure throughout the entire section A. The acute hyperemia is consequently diminished, less tension placed on the capillary walls, relief in excessive transudation of blood afforded also free passage through the venous channels, due to absence of occlusion and increased "negative" pressure within the veins.

Fig. 5.—Case V, A. P., aged 21 years. Simple fracture of the ends of the radius and ulna healed. Owing to difficulty in retaining fragments in the proper position, a very tight cast was applied. Inadvertently, through transfer of patient, the cast was retained for six weeks, during which time hand had been quite edematous. X ray taken seven weeks from time of injury, after removal of the cast, shows well developed osteoporosis.

In section B the effects are far different from those seen in the former instance. The heart's action is sufficient to propel the arterial stream to the extremity, and even though its force is weakened in overcoming gravity in its ascent and by other forms of resistance, the movement is sustained by the action of gravity upon the venous column. With the lowered arterial pressure toward the extremity, naturally a smaller quantity of blood traverses this route, consequently the vessels, instead of being distended, would present a contracted lumen.

Given a case, then, presenting all the essential features of the hypostatic engorgement, by placing the part in an elevated position, gravity immediately, 1, facilitates lymphatic drainage to relieve venous constriction and edema of the extremity; 2, transforms the venous accumulation into an hydraulic wedge to force open the constriction, and, in its removal, siphons the engorged vessels of the extremity; and, 3, establishes a free and constant flow of fresh blood in place of the stasis of stagnant and toxic blood.

The decalcification, which may be called "hypostatic osteoporosis," should be regarded as only one of the changes due to the catabolic progress which resulted from these circulatory disturbances. The extreme atrophy of the musculature with deterioration of their fibres, thickening and softening of the nails, and loss of elasticity of joint ligaments were more obscured or less noticeable changes. The bone changes are not dissimilar to those frequently observed in the rarefaction which develops about the metal screws in plated bone. Here the concrete foreign body causes a localized decalcification by osteoclasis through irritation. Waste products lying stagnant among the tissues, even though held largely in solution, have a similar action and yield the diffuse absorption of bone salts seen in our cases.

Fig. 6.—Case VI, J. M., aged 28 years. Eight weeks, case brought to hospital, right side completely paralyzed owing to penetrating wound of skull involving the left orlandic area with loss of brain substance. Function returned to leg, but very slowly to arm and hand. At the time of x ray only feeble movement of the hand and wrist joints were possible. Bone density practically unaffected.

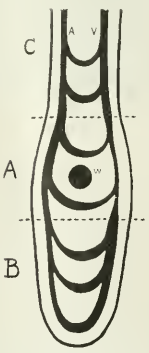

Fig. 7.—Diagram illustrating circulatory conditions in a wounded arm pendent.

Fig. 8.—Diagram illustrating circulatory conditions in a wounded arm elevated.

While the two extremes of position have been used to demonstrate the effect of gravity on this condition, the upright elevated position of the arm is by no means recommended as the ideal position, as its influence in lowering the arterial pressure may too considerably affect the quantity of blood carried to the extremity. Rather should the conditions presented—tenseness of the skin in the wounded area and edema or anemia of the extremity—indicate the elevation required, which may be changed to maintain the most healthy appearance of the limb. In several leg and foot cases which were studied, decalcification was limited to the inflamed area. All these patients were confined to bed where at least a slight elevation was effected by the weight of the body sinking into the springs. They did not have the same edematous extremities. This indicates that at least a position level with the shoulder should be maintained, increasing the elevation by suspension or inclined plane as more acute inflammation and swelling shows. Gravitation of pus along fascial planes should be watched for, but this

danger is slight if sufficient drainage is afforded. As function returns, elevation becomes less necessary.

Inquiries made among surgeons in other institutions revealed the fact that this decalcification had not been observed elsewhere. This fact does not mean that it was not to be found in other institutions, for, while in some the elevated position was employed in these cases as a matter of routine apparently for the sake of comfort to the patient or to facilitate the application of dressing—this would explain its absence—in others where the elevated position was not used, early evacuation of cases, incomplete x ray study, or deficiency in x ray material may have allowed the changes to pass unobserved.

The condition is not one which exists to the same extent in civil life, otherwise there would not be the present dearth of literature upon the subject. The fact that it does exist, however, has been borne out through investigation by the writer since his return, and is particularly seen in cases of ununited fracture of the bones of the forearm and wrist, and long standing, deep inflammatory affections in this same area. It is in military surgery that the recognition of this condition will prove of the greatest value, and while the recent wonderful advancement in surgical technic of wounds promises to overcome to a vast extent the long suppurative process with which we had to deal and which led to these results, nevertheless what has been learned from these cases will undoubtedly be of considerable benefit.

In concluding, the subject is summarized as follows: 1. In a series of cases presenting a septic compound fracture of the bones of the forearm or of the carpal area, treated with the arm in a pendent position, a diffuse progressive decalcification involving all the bones in the distal extremity of the part and beyond the inflammatory zone, was disclosed, becoming quite apparent about three weeks after the time of injury especially in the cancellous structures, the carpal bones, and ends of the long bones.

2. Changes in soft structures were associated, first appearing as a marked edema and passive congestion of the extremity which continued as long as the wounded part remained acutely inflamed and with its subsidence showed marked retrogressive changes, atrophy, and deterioration of the various structures.

3. The process is distinctly the result of prolonged hypostasis, due to venous constriction in the wounded area and the action of gravity on the circulation of the pendent arm. The changes are produced by impairment of nourishment to the tissues of the extremity and catabolic activity stimulated by the irritation afforded by the accumulation of waste and toxic products. The nature of the disturbing factor indicates the use of the elevated position not only to overcome, but also to guard against, the presence of this condition.

Large Bony Defects in the Skull.—C. Noon (*Lancet*, March 10, 1917) records three cases in which large defects in the skull were successfully repaired by the insertion of plates of silver beneath the periosteum.

LARVA MIGRANS ON THE MEXICAN BORDER.

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There seems to be a difference of opinion in the literature regarding the locale of this human parasite, which has been rarely described. Fantham, Stephens, and Theobald (1) say that Cholokowsky attributes the "wormlet" observed by Sampson and Sokolen and others to the Gastrophilus larva; it burrows into the epidermis of man by minute passages and the phenomenon is designated as skin mole, larva migrans, and creeping eruption. Professor Abraham (2) says that the occurrence of the larvæ of insects beneath the human skin is very rare in Europe, not more than three or four cases having been recorded. The presence of the maggots of the genus Œstrus beneath the skin of persons in South America, however, appears to be not uncommon. If this is the case, the literature does not tend to confirm it.

My cases and those observed by other medical officers in the Federal service on the Border during the summer of 1916, were undoubtedly due to the larva migrans from the bot fly, and one in particular proved so interesting that I had a photograph taken in New York of the patient's back before the lesions healed. The history of the cases was practically the same in all the instances.

Following a test march, called the ten day hike—100 miles—in August, 1916, a large number of men complained of an intense itching of various parts of the body. The temperature at the time was very high, ranging from 110° to 120° F., registering one day as high as 141°, and on general examination the itching was attributed to prickly heat, as in many instances the tiny eruptions appeared on the back underneath the pack which each man carried. However, as they did not heal under the ordinary lotions and ointments which had absolutely no effect, and the discomfort was so intense that the vitality was lowered owing to loss of sleep, the men were sent back to the main camp, where various diagnoses were made of eczema or dermatitis, or the one of prickly heat was confirmed. A few days later, however, close examination revealed small vesicles, from which serum exuded when they were pricked, profuse in number, but apparently segregated in small groups with patches of clear skin between them. On watching the skin closely, however, it was noticed that within twenty-four hours after these vesicles were rubbed by scratching, small serpentine furrows would develop, at the end of which another vesicle would appear, and from the tract itself sometimes serum appeared. These vesicles would at times, following various treatments, lie dormant for as long as four or five days with apparently no itching or symptoms of discomfort. Then suddenly they would begin to itch, the patient would scratch or rub with the clothing, and it seemed to take on life again and spread out in another serpiginous tract. The top vesicle would be broken by the scratching, the serum exude and spread over the skin, a tiny furrow would slowly spread in a given direction, and in twenty-four or thirty-six hours

another vesicle would appear at a considerable distance, about an inch, and from that vesicle the following twenty-four hours or so would find another burrow extending another inch or half inch to be topped by another vesicle, and so *ad infinitum*, until they spread all over the body and in many in-

Fig. 1.—Active and late stage larva migrans from Border patrol, showing extent of lesions.

stances on the arms and legs. The lesions macroscopically showed no parasite; under the microscope many polymorphonuclears and a few lymphocytes appeared, but only at one time could we detect anything resembling a living creature, animal or vegetable parasite, and then the pathologist was not positive whether or not it was extraneous matter. It had a threadlike appearance with a slight joint like a lobster's claw on the end. This was invisible under the magnifying glass. The only treatment that was efficacious was first to prevent irritation within the affected area and treat the head of each vesicle with pure phenol and then touch the spot with tincture of iodine; after which they would gradually disappear. The burrows were likewise treated in this manner.

My theory that the etiological factor in this condition was some form of animal or vegetable parasite is borne out by the progress of the cycle. It was traced back to a ranch where all the men later

Fig. 2.—Active and late stage larva migrans, showing detail of lesions.

affected camped in an old corral infested with flies and horse manure.

I personally treated over one hundred cases in two regiments during a period of over three months, though many forms of treatment were tried before we struck the one that accomplished the most good. The majority of the cases stopped immediately at first and lay dormant for a week or two, only to break out anew at the end of that time. Neglected and irritated by scratching and rubbing, their spread was unceasing. There were apparently many larvæ in one vesicle and the ones in the deeper layers of the skin escaped the effect that killed the more superficial ones nearer the epidermis. All of those in the hundred cases which I could see regularly and had under control I cured after considerable experimentation. When the cases first appeared we injected hypodermically alcohol, ether, and chloroform under the head of the vesicle. This was ineffectual and in addition produced local gangrenous necrotic areas which were hard to heal. It was discouraging to see burrows again start from the edges of these necrotic areas and extend in lesions as active as before.

Finally we evolved the one treatment which proved effective. We painted the vesicle and burrow with a fine brush with strong carbolic acid, ninety-five per cent., until the tissue turned white and then painted the surface over with ten or twenty per cent. tincture of iodine. Only the vesicle and burrow were touched. This was followed up the second day, protected by a dry, sterile dressing, the patient allowed to rest, and carefully watched for recurrence. In many cases this was sufficient, but in other cases where there was extension all over the body the individual lesions could not all be treated in this strenuous way at once, so there were a number of sittings. It took time and patience, but the reward was ample. The following case illustrates one neglected type and the serious condition that ensued.

Case.—This man was sent back to camp from the long hike with a diagnosis of prickly heat over his back where he carried his pack roll. There was intense itching, considerable inflammation, and hyperemia of the skin. When I made a close examination I saw that his back was completely covered with masses, more or less individualized, simulating vesicular dermatitis. On studying the lesions one could see here and there minute burrows extending like a white linen thread with a worm like appearance. The affected area was so extensive that in the next few days I could treat only a small part of the whole. At the end of that time I was sent to another regiment, where I found many cases and cleaned them up, and in the meantime lost sight of my old patient, who for some reason decided to try more intensive treatment. On my return in three weeks I found him in very bad condition from extensive and concentrated treatment with iodine, which had been painted over the whole surface of his back, unaffected areas and all, every day. Before this cleared up and the specific treatment had been carried on for a short while the regiment was ordered home, and on arriving in New York the accompanying photographs (Figs. 1 and 2) were taken. The intensive treatment with iodine had caused a round abscess area at least four inches in diameter, the lesions, apparently, having worked deep into the flesh. The abscess was incised and from one to one and a half ounces of pus withdrawn. There were other abscess areas and in some parts necrosis of the skin where there was not much subcutaneous fat. The abscesses were opened and drained, the isolated lesions treated with the fine brush as before, and to the eczematous parts of the skin soothing ointments were applied and the whole back bandaged with sterile gauze. This treatment was continued daily for two weeks, when the patient was obliged to leave for Chicago; he wrote me later that he was progressing satisfactorily.

Most of these cases responded to proper treatment in a short time.

REFERENCES.

1. H. B. FANTHAM, J. W. W. STEPHENS, and F. V. THEOBALD: *The Animal Parasites of Man*, John Bale Sons & Danielsson, London, 1916. Partly adapted from Dr. Max Braun's *Die Tierrsschen Parasiten des Menschen*, fourth ed., 1908, 599. 2. P. S. ABRAHAM, F. R. C. S. I., Curator of Museum, Royal College of Surgeons, Dublin: *Medical Press and Circular*, London, April 12, 1882, 314.

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THE WAR AND THE NERVOUS SYSTEM. I.

Peripheral Nerve Injuries.

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The modern study of peripheral nerve affections due to war injuries may be said to have begun with the studies of Weir Mitchell, Morehouse, and Keen in their report on Gunshot Wounds and Other Injuries of Nerves, which were a byproduct of our Civil War. These were first published in 1864. *The Diseases of Nerves Resulting from Injury*, by Weir Mitchell, a bulky monograph, appeared in 1871, while a year later he published his most important volume, which, dedicated to Dr. William A. Hammond, contained the most important summary of our knowledge on war injuries of nerves in the English language at that time. It was in 1863 that a hospital of 400 beds was organized to be devoted exclusively to nerve injuries. Mitchell made his most important studies in this Philadelphia hospital, working with a "vast collection of wounds and contusions of nerves including all of the rarest forms of nerve lesions of almost every great nerve in the human body."

The Russo-Japanese War afforded a somewhat similar opportunity for the study of such lesions. It was not neglected, but as the results were mostly published in these languages they have been available only in small part to western students. It has therefore remained for the present world war to offer again an unparalleled opportunity for a renewal of the study of this phase of neurology, a brief glance at which is presented in the following short discussion of some of the peripheral nerve injuries. This article will refer only to injuries of the peripheral nerves of the upper extremities, reserving for another time and place a discussion of the injuries of other parts of the nervous system, such as the brain, spinal cord, midbrain, plexus injuries, and injuries of the peripheral nerves of the lower extremities.

Peripheral nerve injuries differ essentially from other types of injuries, for in the vast majority of cases they are infected. Furthermore the results of indiscriminate damage to anatomical structures by projectiles are quite different from those picked out by disease of the nervous structures themselves. Again by reason of the generally good physical condition of the injured person, the character of repair is usually more satisfactory than that found in peripheral nerve disease of other types of etiology.

The statistical summaries as to localization of injuries are beginning to appear in the recent literature. From these it is evident that the older statistics are being more or less accurately duplicated. The best available summary is that of Tinel (1), of Dejerine's service in the Salpétrière, who in an analysis of 628 cases, which forms the basis of one of the most valuable of the recent war studies, has found the distribution of peripheral nerve injuries as follows:

Upper extremity:

Radial nerve	146
Ulnar nerve	84
Median nerve	67
Musculocutaneous nerve	11
Circumflex nerve	25
Lesions of the brachial plexus	27
Associated grave lesions of several of the nerves of the upper extremity	48
	409

Lower extremity:

Crural nerve	11
Internal saphenous nerve	14
Sciatic trunk nerve	78
Sciatic, internal popliteal nerve	29
Sciatic, external popliteal nerve	37
Posterior tibial nerve	18
Musculocutaneous nerve	7
Anterior tibial nerve	4
External saphenous nerve	9
Obturator nerve	1
Cutaneous femoris nerve	3
Genitoabdominalis nerve	1
Lumbosacral plexus nerve	10
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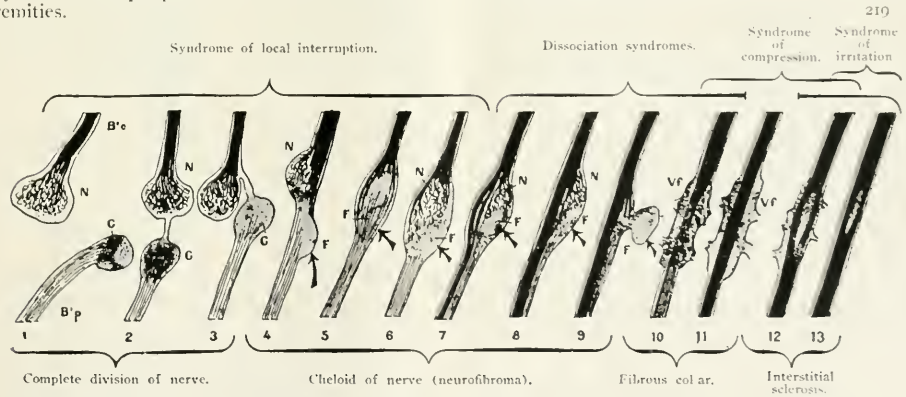

Fig. 1.—Schematic representation of the different clinical syndromes. B'c, central end of sectioned nerve. B'p, peripheral end. C, cheloid of peripheral end. F, cicatricial fibroma developing along the path of the projectile, the arrow indicating the point where the bullet has touched the nerve; at this level only a pure fibroma is present. N, neuroma where the best part of the proliferating fibres from the central stump are lost, the young axis cylindres being lost in the fibrous meshes and unable to reach the peripheral end with its empty sheaths. The work of proliferation according to each case may be nearly nil, 5-9, or very active, 4, 6, 7, 8. Vf, Fibrous bridge, englobing and compressing a badly injured nerve; 10, a nerve apparently healthy; 11 or a nerve involved in interstitial sclerosis and slightly enlarged; 12, 13, simple interstitial induration, appreciable to palpation without increase in size of nerve. (J. and A. Dejerine et Mouzon.)

Recent numbers of the *Revue Neurologique* (2) have been entirely devoted to the study of war neurology and the best work of the French school is here presented. Very few systematic studies have been presented thus far from the English hospitals. The valuable study of Renfrew White (3) is the

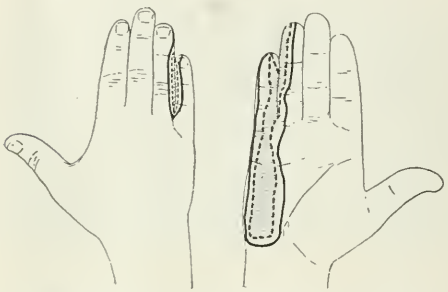

Fig. 2.—Area affected after lacerated wound of the wrist resulting in *main en griffe* with abducted little finger and loss of contraction of hypothenar muscles and of three or four interossei. (White.)

most complete thus far seen on peripheral nerves, while those of Holmes and Lister (4) on the lesions of the brain are equally noteworthy. German observations, while undoubtedly numerous, are not obtainable.

The pathological notions laid down by Waller, Duchenne, Vulpian, and Weir Mitchell have been much amplified by the recent work, and it would appear that the clinical pictures permit one to state whether the nerve fibres have been, 1, completely divided; 2, partially divided; 3, contused; 4, concussed; 5, compressed; 6, stretched or ruptured; or 7, infected and inflamed. While from the initial pictures seen the diagnosis as to these results may not be determinable only in the course of the injury, the researches of Dejerine, Mouzon, Tinel, Marie, Athanassio-Bénisty, Leri, and others have permitted the erection of four fairly clear syndromes with a fairly definite pathology. These are illustrated in the valuable study of J. and A. Dejerine and Mouzon (5). These clinicopathological syndromes are: 1, syndrome of complete interruption; 2, syndrome of dissociation; 3, syndrome of compression, and, 4, syndrome of irritation.

The examination of the wound is the first requisite. Special attention should be made to local suppurative foci and also bone injury, since both may involve other nerves which are not directly wounded. Special importance should be attached to the date of the injury, careful time records should be made concerning all peripheral nerve injuries, since valuable prognostic and therapeutical principles are bound up in the question of the length of time under consideration. Experience is accumulating to show that in war nerve injuries at least two months must elapse before the clinical examination is of maximum value.

In the early period after the injury, inhibition and blockings, functional within the nerve fibres themselves and psychogenic, are operative. Atrophy and hypotonia require several weeks to become definite; pains of irritative neuritic character commence in from one to two weeks and increase for a month or so. Formication is apt to appear in from one to two months, closely following the appearance of reaction of degeneration. It is far better to delay operative procedures as a rule until a sufficient time has elapsed. This is usually from two to three months. Immediate or secondary onset of a paralysis is an important feature to be observed. The first speaks for partial or complete section of the nerve trunk, the second of bony pressure or compression from other sources.

Certain nerve injuries seem to be accompanied by sharp, immediate, and violent pain, the ulnar, median and sciatic being examples; others give rise to a sensation of marked swelling tension in the affected limb. Cramplike sensations accompany other wounds. The evolution of the clinical course is important to record. The examination proper should follow regular neurological lines (6). Here the attitude taken by the limb is of special importance (7). The study of the voluntary musculature follows then that of the reflexes, objective examination of the muscles as to atrophy, tonus, mechanical contractility, sensibility to deep pressure and to squeezing, fibrous retraction of the muscles, contractures, and hypertonic phenomena. The vegetative neurological signs are extremely varied and important. These have been chiefly called changes in protopathic sensibility by Head. Such protopathic signs (trophic) are the result of lesions chiefly of unmyelinated vegetative autonomic and sympathetic fibres traveling in the nerve trunks to be distributed to the muscles, blood-vessels, fibrous tissues, skin, etc. Thus special attention is to be paid to changes in the skin, drying, glossiness, edema, changes in amount and chemistry of perspiration, hairy changes, ulceration in the fibrous and bony tissues, cartilage, cartilage bone, aponeuroses, and tendons. The sensory changes of the skin require special care in plotting

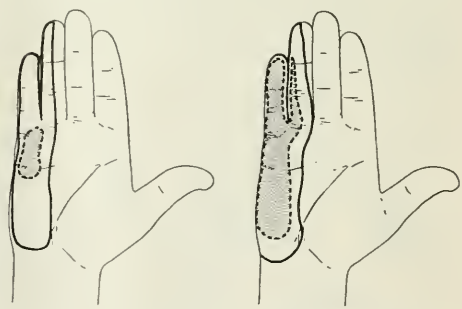

Fig. 3.—Lesion with interrupted syndrome with fibroma. (White.)

to test for cotton wool, pin prick, thermal recognition, compass point recognition. The deep sensibility, vegetative changes to position of the joints, deep pressure, bony sensibility, are all of importance.

Objective examination of response of the nerve trunk itself to pressure when it develops tingling or pain or shows the presence of a neuroma or an induration is imperative. The electrical examination is equally important and should follow the usual

well recognized procedures. According to the findings then of the clinical examination the chief type of syndrome present may be made out. These syndromes, as has been mentioned, are: 1, the interruption syndrome; 2, compression syndrome; 3, irritation syndrome, and, 4, restoration syndrome.

Fig. 4.—Loss of sensibility after complete division of the ulnar nerve. (Sherren.)

1. The interruption syndrome.—The interruption syndrome, when complete, causes abolition of all the functions of the nerve. Paralysis of the involved muscles is complete, tonus is lost, the limbs assume attitudes caused by the antagonist predominance. There is no pain on pressure of the muscular masses and there is muscle anesthesia. There are abolition of the tendon, osseous and cutaneous reflexes, exaggeration of the myotatic reactions, amyotrophies, deformities such as dorsal tumor of the tarsus or carpus, and modified electrical reactions.

The sensory changes need some elaboration and the principles involved apply to the other syndromes to be described later. In complete division the researches of the English school, chiefly Head and Sherren, and those of Dejerine have shown that the sensory peripheral fibres may be divided into three systems:

a. Those which subserve deep sensibility and conduct the impulses produced by pressure. The fibres of this system run mainly with the motor nerves and are not destroyed by division of all the sensory

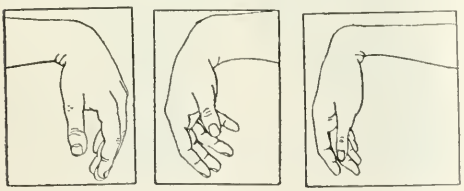

Fig. 5.—Deformity due to paralysis of the radial nerve. (Athanassio-Bénisty.)

nerves of the skin. From the studies of Ranson it would appear that the fibres here involved are the unmyelinated ones of the vegetative system. They are a part of Head's protopathic system probably. Thus Head's generalizations concerning the specificity of a protopathic system must undergo some radical modifications. In a part innervated only by this system gradual increase in pressure can be recognized and pain experienced when such pressure becomes excessive. The patient can also appreciate the extent and direction of movements produced passively in all the joints within the affected area.

b. Those which subserve what Head has called protopathic sensibility. This system of fibres and end organs responds to painful cutaneous stimuli and to the extremes of heat and cold; it also endows the hairs with power to react to painful stimuli. The distribution of the protopathic fibres usually overlaps greatly the area supplied by similar fibres from adjacent nerves.

c. Those which subserve epicritic sensibility. The nerve fibres and end organs of this system endow the part with the power of responding to light touch with a well localized sensation. The existence of this system enables one to discriminate two points and to appreciate the difference between mild degrees of cold and heat. The distribution of these fibres in large peripheral nerves, such as the median and ulnar, has very little overlap compared with the greater overlapping of the protopathic vegetative supply.

These changes in sensibility may be observed in division of a mixed nerve such as the ulnar. After complete division of this nerve at the wrist, if no tendons—carriers of vegetative fibres—have been divided at the same time, the patient is able to appreciate those stimuli commonly called tactile. A

Fig. 6.—Skin manifestations due to lesions of the peripheral nerves. (Athanassio-Bénisty.)

touch with anything which deforms the skin may be readily appreciated and correctly localized. When pricked with a pin the patient knows that he has been touched but fails to perceive the sharpness of the stimulus—deep sensibility. But if tendons are divided at the same time—involvement of the vegetative fibres—or the section involves the nerve above the point at which its muscular branches are given off, deep touch may be unperceived. These characteristics are of the utmost importance; many cases of nerve injury have been overlooked from failure to recognize these facts.

Thus in the illustration (Fig. 2) as a result of a lacerated wound of the wrist, *main en griffe* resulted within two weeks with abducted little finger and loss of contraction of hypothenar muscles and of the three or four interossei. The nerve was found strangled in scar tissue, causing incomplete interruption. In the case illustrated in Fig. 3 there was an interruption syndrome with fibroma, which was resected, the nerve sutured, and the improvement marked. These are quite analogous to the experimental lesions of Sherren (see Fig. 4).

The point of a pin and all temperatures are unappreciated within an area which varies somewhat in each case—loss of protopathic sensibility. Surrounding this area and corresponding closely to the distribution of the nerve is a territory within which the patient is unable to appreciate light touches with cotton wool and and temperatures between about 22° and 40° C., minor degrees of temperature, and fails to discriminate the points of a pair of compasses when separated to many times the distance necessary over the corresponding position of the sound limb or the unaffected portion of the injured one, demonstrating loss of epicritic sensibility. Within this area of loss of sensibility to light touch, to which Head and Sherren gave the name of "intermediate zone," the patient is able to appreciate the sharpness of a pin prick and to differentiate temperatures below 20° and above 45° C., naming them correctly.

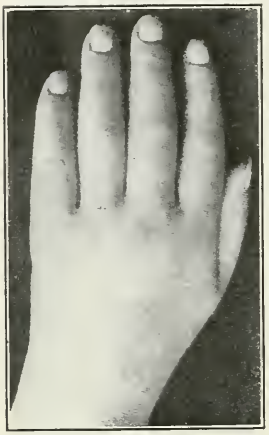

Fig. 7.—Skin manifestations due to lesions of the peripheral nerves. (Athanassio-Bénisty.)

Division of a peripheral nerve produces a well defined loss of epicritic sensibility, a smaller loss of protopathic sensibility with, as a rule, ill defined limits. In many cases there is no loss of deep sensibility. Complete division of certain nerve branches produces no objective change in sensibility. These are the musculospiral below the point at which its external cutaneous branches are given off, the radial, and certain cervical anterior primary divisions.

Reaction of degeneration gradually develops within two or three weeks. There is usually an absence of spontaneous pain, and pain is not produced by pressure upon the nerve trunk or muscle masses; neither does tingling or formication result by pressure on the nerve below the lesion. Tinel has shown, however, that in the interruption syndrome there is an area of tingling which is produced over a limited zone corresponding to a neuroma of the central stump which remains fixed over weeks and months and thus constitutes a sharply defined symptom of complete interruption.

Trophic disturbances are not frequently found, save for some edema, cyanosis, or a moderate degree of hypertrichosis. Grave trophic disturbances do not seem to accompany the complete interruption syndrome. Trophic ulceration may be an exception, as Dejerine has pointed out. These seem to be secondary to cutaneous traumata. They are especially frequent in sciatic lesions.

Several examinations at several weeks' intervals are necessary to determine whether there is a complete interruption syndrome. This is of importance since nothing save surgical interference will help a complete interruption syndrome, whereas surgical interference in a badly observed case, which may not have been one of complete interruption, may often be made one by surgery and thus produce a worse lesion than had the bullet primarily.

2. *Syndrome of compression.*—Here a more or less complete paralysis results, usually as marked as that seen in the interruption syndrome. Muscular atrophy takes place, but it is slower and less complete than in the case of the interruption syndrome. Persistence of the compression causes increasing atrophy. There is relative conservation of muscle tonus. This, Dejerine and Mouzon have pointed out, is a fairly good sign of the compression syndrome. When it does totally disappear it may require months, instead of weeks only, as in the interruption syndromes. Myotatic irritability is usually conserved and exaggerated. The more nearly normal are the ideomuscular reflexes the lighter the compression. Reaction of degeneration is always partial and incomplete. The anesthesiæ are variable.

Head and Sherren have shown that in incomplete division, which may also give rise to the syndrome of compression, the sensory symptoms may be nil The patient is conscious of an area altered in sensibility, and it is often possible to demonstrate this by the changed sensibility produced at its borders when a piece of cotton wool or the point of a needle is dragged lightly across the skin from the sound to the affected portions, showing a line of change. If the area of changed sensibility is well marked, response to the compass test will be defective. In more severe cases the loss of sensibility to cotton wool may be absolute with borders as well defined as after complete division. When the injury is more severe impairment or loss of protopathic sensibility

A B

Fig. 8.—A, paralysis of the adductor of the thumb due to lesion of the eighth cervical, and hypertonia of the interossei due to irritation of the first dorsal. B, "Scissors hand" due to hypertonia in the median due to incomplete section with neuroma and to hypertonia in the ulnar. (Laignel-Lavastine et Paul Courbon.)

results and the sensory loss may resemble closely that seen after complete division. Sherren has shown that, contrary to the usual teaching, the motor loss in incomplete division is not more than the sensory loss. There is usually an absence of pain and of formication and the trophic disturbances may be partial and not persisting. Cyanosis and edema may be present.

Surgical liberation is advisable, but a diagnosis can be reached only after several weeks. The amount of restoration will vary considerably, depending upon the number and quality of fibres cut off. Simple liberation here is the proper surgical procedure. Resection and suture are advisable only when the syndrome approaches closely that of complete interruption and where the compressing stricture has rendered the nerve a fibrous sclerotic band.

3. The syndrome of irritation.—Great variability and diversity characterize this syndrome. The chief features are a type of neuritis which may be severe, mild, or, as in the causalgia type originally described by Weir Mitchell, evidenced by severe and violent pains occurring in paroxysms. In a mixed nerve this syndrome may be accompanied by paralyses.

FIG. 9.—"Writer's hand" due to reflex and psychogenic contractures (Laignel-Lavastine et Paul Courbon.)

In the severe neuritic types incomplete paralyses are nearly always present. A certain amount of movement is possible and the reaction of degeneration is often variable or partial. Muscle tonus is usually preserved or even hypertonus is present with fibrous interstitial changes apparently due to autonomic overactivity, possibly from greater loss of sympathetic unmyelinated fibres by the lesion. This apparent disturbance in the reciprocal activity of the autonomic and sympathetic fibres may also cause the marked trophic disturbances in this syndrome, and also the vegetative fibre involvement account for the severe and deep pains.

These pains are the "devil's own," as the patients have described them to me. They are not only spontaneous with burning, sticking, and tearing proclivities, but they are especially vehement on motion and accompanying muscle contraction, the influence of heat or cold or even the slightest contacts. The nerve trunks are specially painful, as is pressure upon the muscles, showing vegetative nerve fibre involvement or deep sensibility.

Cutaneous hyperesthesia is usually present, and even in the presence of an anesthetic touch or pin prick may be very painful, badly localized, diffuse, irradiating, and persisting for some time. Tinal has spoken of this cutaneous hyperesthesia as almost pathognomonic of the syndrome of irritation.

The trophic disturbances are characteristic and most grave in this syndrome. The more usual signs of hypertrichosis, cyanosis, and edema are present, added to and aggravated by dryness of the skin with fibrous infiltrations—autonomic types?—or eczematous or ulceration with profuse acid perspiration which makes large fetid and running areas—sympathicotonic type. The fibrous infiltrations cause retraction of the tendons and aponeuroses with immobility of the joints. The nails become incurved, ridged, crevassed, cracked, or irregularly marked. The vegetative nerve disturbances may cause profound bony changes (8).

Notwithstanding the gravity of these neuritic types of the irritation syndrome they show a marked tendency toward spontaneous recovery. This is usually ushered in by the appearance of marked formication and tingling which takes the place, more or less gradually, of the severe and almost intolerable pains. The paralyses also begin to clear up, but there is a decided tendency for the vegetative lesion effects to persist for months, even years. Thus the fibrous retractions of the tendons and muscle masses, the tendon fixations, the joint anchyloses and the bony changes only repair very slowly and after continued mechanotherapy.

The liberation of the nerve is frequently called for surgically, which is often followed by a prompt and steadily continuing reparation, particularly of the pains and the pareses. Considerable time should be given for the reparation process, but if specially obstinate dissection, resection, and suture may be advisable.

Attenuated neuritic types, simple neuralgic forms, and the severe causalgias of Weir Mitchell belong in this group also. Of the upper extremity nerves the median is particularly prone to causalgia. This rarely comes on until three or four weeks after the initial injury. This clinical type is so well described in our literature that it requires little discussion. The chief new feature brought out is that it is chiefly conditioned by a trauma of the deep sensibility—vegetative nerve—fibres of the periarterial plexuses. Liberation of the nerve fibre rarely remedies the situation and special surgical procedures which are to reach the vegetative plexuses are being devised. The results obtained are still *sub judice* (9).

The syndrome of regeneration requires extended discussion, as do also the various dissociation types as well as that known as ascending neuritis. This will be discussed in a later article, as will also the special signs of the separate peripheral nerve lesions of the upper extremities.

REFERENCES.

1. TINEL: *Les Blessures des Nerfs*, Masson et Cie., Paris, 1916. 2. *Revue Neurologique*, xxii, xxiii, 1916. 3. RENFREW WHITE: *British Journal of Surgery*, May, 1917. 4. HOLMES and LISTER: *Brain*, 1916; *Proceedings of the Royal Society*, 1916. 5. DEJERINE and MOUZON: *Revue Neurologique*, xxii, Nos. 17, 18, p. 461; *Presse Medicale*, May 10, July 8, August, 1915. 6. JELLIFFE and WHITE: *Methods of Examination in Diseases of the Nervous System*, 2nd Ed., 1917, Lea and Febiger. 7. See *Nouvelle Iconographie de la Salpêtrière*, 1916, for extension studies on the attitude of limbs due to peripheral nerve injury. 8. MORTON: Distal Osteoporosis of the Upper Extremity, NEW YORK MEDICAL JOURNAL, July 7, 1917. 9. LERICHE: Collection Horizon, Masson et Cie., 1917; MEIGE: *Ibidem*; ATHANASSIO-BENISTY: *Traitement et Restoration des Lesions des Nerfs*, Collection Horizon, Masson et Cie., 1917.

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American Red Cross Base Hospitals

Thirty-eight Units Organized—Six Already Abroad—Four on the Eve of Departure—Organized and Equipped by Private Funds—Surgeons Enrolled as Army Officers—A Million Five Hundred Thousand Dollars Spent for Equipment

SIX base hospital units, each of 500 beds, organized under the auspices of the American Red Cross, have been formed and they have sailed for France, namely: No. 2, organized at the Presbyterian Hospital, New York city; No. 4, Lakeside Hospital Cleveland; No. 5, Harvard University, Boston; No. 10, Pennsylvania Hospital, Philadelphia; No. 12, Northwestern University Medical School, Chicago, and No. 21, Washington University Medical School, St. Louis. Four additional base hospitals, similarly organized, are ready and are under orders to sail, namely: No. 6, Massachusetts General Hospital, Boston; No. 15, Roosevelt Hospital, New York city; No. 17, Harper Hospital, Detroit, and No. 18, Johns Hopkins Hospital, Baltimore. Twenty-eight more are in process of organization.

That these hospitals were brought to such a state of organization and equipment in so short a time that six are already in Europe or on the way there and four are ready to sail, is due largely to the efforts of Colonel Jefferson R. Kean, of the Medical Corps, U. S. Army, general director of military relief of the American Red Cross. Colonel Kean has long foreseen the necessity of being able to place a large number of base hospitals in service as soon as practicable after the outbreak of a war, and he has been making plans for several years to meet the demands expeditiously for hospital facilities for troops.

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Colonel Jefferson R. Kean, in the centre, and his two aides, Major R. M. Kirby-Smith and Major C. H. Connor, who aided in raising the $100,000,000 Red Cross fund.

It would naturally be supposed that the work of organizing and placing base hospitals in service would come directly under the medical department of the army and that the expenses of equipment, etc., would be met from Government funds. However, in the present instance, as the army did not have sufficient funds for the purpose and as the emergency permitted of no delay, the Red Cross undertook to meet the needs. The expense of equipping, outfitting, and otherwise making the base hospitals ready for service is being met from funds contributed from private sources for the purpose through the American Red Cross, and the hospitals are placed in condition for use and turned over to the army when organized practically without expense to the Government.

The Red Cross base hospitals are being organized at certain large civil hospitals and medical schools of recognized standing. They are composed of doctors and nurses who are accustomed to work together and already have the spirit of unity and organization. The first requirement for the organization of a base hospital is a parent institution, either a large civil hospital or a medical school, which can furnish the large professional staff and still have left a sufficient staff to carry on the work of the parent institution. Another requisite is to find the member of this staff who by seniority and professional and personal standing, is a leader who can successfully organize the base hospital.

The funds for equipping the hospitals, besides coming from wealthy friends of the parent institutions, are also raised through local Red Cross chapters, which should be strong enough in each case to contribute $25,000 and also to furnish through its committees of women the hospital linen, hospital garments, and surgical dressings required. The complete equipment of a base hospital costs from $40,000 to $60,000.

As soon as a base hospital is taken over by the army, an officer of the Medical Corps of the regular army is assigned as commanding officer and one is detailed as adjutant, an officer of the Quartermaster Corps or Quartermaster Officers' Reserve Corps is detailed as quartermaster, the members of the professional staff enter the service as members of the Medical Officers' Reserve Corps, and in the case of dentists as members of the Dental Officers' Reserve Corps. The Government, of course, pays the officers the salaries pertaining to their rank, and the salaries of the nurses and other civilian employees of the hospital.

Officers of the reserve corps receive the same pay as prescribed for corresponding grades in the regular army, which for the first five years of service is

as follows: major, $3,000 a year; captain, $2,400; and first lieutenant, $2,000. Pay is increased at the rate of ten per cent. for every five year period after the first. Nurses and reserve nurses are paid at the rate of $50 a month for the first three years of service, $55 for the second three years, $60 for the third three years, and $65 after nine years of service, and they are allowed an increase of $10 a month while on foreign service.

The service of the rescue and care of sick and wounded of armies is divided into three zones: The first is called the service of the front and extends from the line of battle back to the field and evacuation hospitals. This zone is operated by the medical service of the army, and the Red Cross organizations do not usually take part in it. The second zone is that of the military base to which wounded are brought from the first zone and where they first meet the comforts and facilities of a real hospital which has good beds, trained women nurses, and a large professional staff. The third zone is that of the home country and the hospitals established at existing permanent institutions, which are called general hospitals.

Thus, the base hospital forms a link between the field hospital and the general hospital. Wounded rescued by the ambulance corps are taken to the field hospital, either directly or through first aid stations, and as soon as practicable they are sent back further to the base hospital. After a wounded man reaches the base hospital, one of three things happens to him: He is discharged as fit for service and is returned to his command; he is sent to a general hospital for further treatment; or he is sent home for recuperation or as disabled for further military service at the front.

The organization prescribed for a Red Cross base hospital is as follows: The director is assisted by an adjutant and a quartermaster, who are staff officers, a registrar, who may be an officer, noncommissioned officer, or specially qualified civilian, and such subordinate administrative personnel as may be necessary. When mustered into the United State service, the director will act as assistant to the commanding officer of the hospital, and in addition to his duty as assistant he will be chief of the surgical, medical, or laboratory service of the hospital. The surgical section includes a chief of the surgical service and eight staff surgeons, including an orthopedist and one or more specialists in the treatment of diseases of the eye, ear, nose, and throat. The medical section includes a chief of the medical service and five staff physicians, including a specialist on nervous and mental diseases. The laboratory section includes a chief and two assistants having competent knowledge of pathology, bacteriology, serology, and röntgenology. There are two dentists skilled in oral surgery; fifty nurses, members of the Red Cross nursing service, one of whom is chief nurse and one of whom may be a dietitian; twenty-five volunteer nurses' aides; 150 male administrative personnel, who may be members of the enlisted reserve corps of the army or may agree to enlist in the sanitary service when

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Staff of the Pennsylvania Base Hospital Unit, Base Hospital No. 10. From left to right: Major Matthew A. Delaney, Major Richard H. Harte, Major John H. Gibbon, Major George W. Norris, Captain Francis R. Packard, First Lieutenant Arthur H. Gerhard, Captain William J. Taylor, Captain H. L. Kidwell, First Lieutenant Henry K. Dillard, Captain Edward B. Krumbhaar, Captain Henry C. Earnshaw, First Lieutenant Joshua E. Sweet, First Lieutenant Norris W. Vaux, Captain Charles F. Mitchell.

called into active service; fifteen employees, and such Red Cross volunteers as may be authorized by the director general of military relief upon approval of the Secretary of War. The director and the chiefs of the surgical, medical, and laboratory sections have the rank, pay, and allowances of major, and the other members of the professional staffs the rank, pay, and allowances of captain or first lieutenant in the reserve corps.

The equipment of a base hospital includes a full supply of medicines such as are usually found in well equipped hospitals, stationery, motor ambulances, restraint apparatus, x ray apparatus, 500 standard medical department iron beds, 1,500 gray blankets,

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Officers and nurses of Base Hospital No. 4, from Lakeside Hospital, Cleveland, being received at Buckingham Palace on May 23d by King George, Queen Mary, Princess Mary, and the Prince of Wales.

operating tables, surgical instruments, and cabinets therefor, an aspirating case, microscopes, ophthalmoscopes, 3,000 sheets, splints, stethoscopes, sutures, hypodermic syringes, clinical thermometers, tourniquets, venereal prophylaxis units, complete sets of surgical and dental instruments, etc.

The commissioned personnel of the six Red Cross base hospitals that have sailed is as follows, the officers being members of the Medical Officers' Reserve Corps except as stated: No. 2, Presbyterian Hospital, New York city: Major Lucius L. Hopwood, Medical Corps, U. S. Army, commanding; Captain Edward M. Welles, Jr., Medical Corps, U. S. Army, adjutant; Captain William B. O. Field, Quartermaster Officers' Reserve Corps, quartermaster; Majors George E. Brewer, director, chief of surgical service; Homer Swift, chief of medical staff; and William Darrach, chief of surgical staff; Captains Alwain M. Pappenheim, chief of laboratory section; Fordyce B. St. John and W. A. Woolsey, staff surgeons; John P. Peters, staff physician; Louis Casamajor, neurologist; Armitage Whitman, orthopedic surgeon; Willard B. Soper, staff physician; and A. R. Stevens, urologist; First Lieutenants Harold Neuhoff, surgical service; Gerhard H. Cocks, eye, nose, and throat; R. H. Kennedy, surgical service; Roderick V. Grace, registrar; Benjamin R. Allison, staff physician; Herbert H. Vermilye, pathologist; W. Barclay Parsons and William F. Cunningham, staff surgeons; and Austin Hobbs, röntgenologist; First Lieutenants Henry S. Dunning and E. H. Raymond, Dental Officers' Reserve Corps; with Rev William R. Jelliffe as chaplain.

No. 4, Lakeside Hospital, Cleveland: Major Harry L. Gilchrist, Medical Corps, U.S. Army, commanding; Captain Arnold D. Tuttle, Medical Corps, U. S. Army, adjutant; Captain Charles Lohman, Quartermaster Officers' Reserve Corps, quartermaster; Major George W. Crile, director; Major Charles F. Hoover, chief of medical service; Major William E. Lower, chief of surgical service; Captains Henry L. Sanford, staff surgeon; Howard T. Karsner, chief of laboratory service; Allen Graham, staff surgeon; Gordon N. Morrill, orthopedist; Walter C. Hill, röntgenologist; Richard Dexter, medical service: First Lieutenants Thomas P. Shupe, staff surgeon; Walter B. Rogers, staff surgeon; Chester D. Christie, staff physician; Herbert B. Weirauch, staff physician; Harry V. Parysek, staff physician; Marion A. Blankenshorn, staff physician, and William R. Barney, registrar; Captains Harold K. Shawan, surgical service, and George M. Waldeck,

ophthalmologist; First Lieutenant Arthur B. Eisenbrey, bacteriologist; Samuel Brock, Drury Hinton, and Benjamin I. Harrison, surgical service; and William S. Sykes, anesthetist; and First Lieutenants Allan MacLachlan and Bertram S. Rothwell, Dental Officers' Reserve Corps.

No. 5, Harvard University, Boston: Major Robert U. Patterson, Medical Corps, U. S. Army, commanding; Captain Daniel W. Harmon, Medical Corps, U. S. Army, adjutant; Major Harvey Cushing, director; Major Roger I. Lee, chief of medical section; Major Robert G. Osgood, chief of laboratory section; Captains Henry Lyman, Reginald Fitz, medical service; Edward B. Towne, surgical service; Walter B. Cannon, laboratory section; George Edward B. Hodge, surgical service; Arthur Newlin, medical service; William T. Shoemaker, surgical service, ophthalmologist; J. E. Sweet, surgical service; William J. Taylor, surgical service; Francis R. Packard, surgical service; Edward B. Krumbhaar, assistant director, laboratory section; and Norris W. Vaux, surgical service; First Lieutenants Frank C. Knowles, surgical service; Arthur H. Gerhard, registrar; Henry K. Dillard, Jr., medical service; William Drayton, Jr., medical service; B. L. Frick, surgical service; John M. Cruice, laboratory section; Joseph H. Cloud, laboratory section, pathologist; and William B. Cadwalader, medical service, neurologist; and First Lieutenants Edwin Shoemaker and Charles S. Jack, Dental Officers' Reserve

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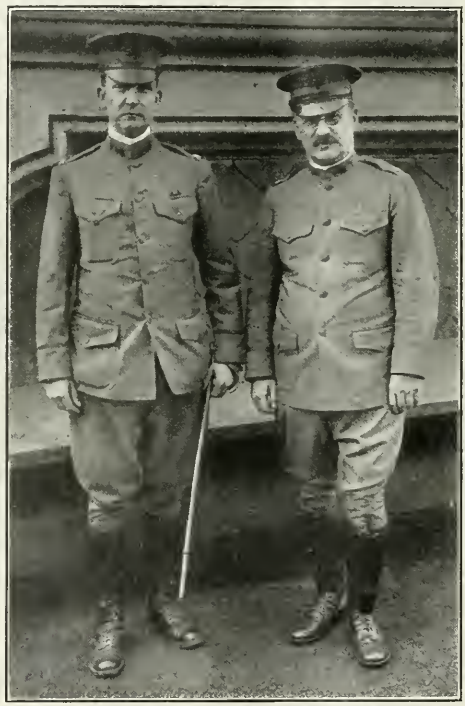
Group of American doctors and nurses being entertained at New Southgate, England, by Sir Thomas Lipton (in center of group) on their way to the war zone.

S. Derby, ophthalmologist; Walter M. Boothby, surgery; Elliott Cutler, surgery; Charles Rund, medical service; Horace Binney, surgery; First Lieutenants Thomas S. Goethals and Samuel C. Harvey, surgical service; Henry Forbes, A. V. Brock, and John J. Morton; Frank R. Ober, orthopedist; George P. Denny, medical service; James L. Stoddard, laboratory section; Gilbert Horrax, surgical service; Oswald H. Robertson, medical service; and First Lieutenants William H. Potter and Harrison P. Parker, Dental Officers' Reserve Corps.

No. 10, Pennsylvania Hospital, Philadelphia: Major Matthew A. DeLaney, Medical Corps, U. S. Army, commanding; Captain Norman L. McDiarmid, medical corps, U. S. Army, adjutant; Captain Herbert L. Kidwell, Quartermaster Officers' Reserve Corps, quartermaster; Major Richard H. Harte, director; Major George W. Norris, chief of medical service; Major John H. Gibbon, chief of surgical service; Captains Charles F. Mitchell, surgical service; Henry C. Earnshaw, medical service; Corps; with Rev. Henry M. Jefferies as chaplain, and Helen Deltman as dietitian.

No. 12, Northwestern University Medical School, Chicago: Major Christopher C. Collins, Medical Corps, U. S. Army, commanding; Captain James C. Magee, Medical Corps, U. S. Army, adjutant; Major Frederick A. Besley, director; Major Milton Mendel, chief of medical service, assistant director; Major Kellogg Speed, surgical service; Captains Walter L. Strandberg, Joseph J. Labovitz, and Payson L. Nusbaum, surgical, Martin R. Chase, medical, Cyril J. Glespel, Amos G. Sherman, Sumner L. Koch, Phillip M. Dale, and Walter H. Nadler; First Lieutenants William E. Harwood, röntgenologist, Albert H. Barnett, E. O. Ravn, C. W. Robertson, Edwin R. Talbot, Nicholas Krost, John Henkin, Robert W. Eaton, TenBroeck Bird, Hilliar L. Baker, and Marcus P. Neal, and First Lieutenants Stanley W. Clark and Charles W. Freeman, Dental Officers' Reserve Corps; with Rev. Jesse S. Dancey as chaplain.

No. 21, Washington University Medical School, St. Louis: Major James D. Fife, Medical Corps, U. S. Army, commanding; Captain Thomas C. Austin, Medical Corps, U. S. Army, adjutant; Captain Borden S. Veeder, Quartermaster Officers' Reserve Corps, quartermaster; Major Fred T. Murphy, director; Major Walter Fischel, chief of medical service; Major Malvern B. Clopton, chief of surgical section; Captain Eugene L. Opie, chief of laboratory section; Captains Lawrence T. Post, surgical staff; Sidney I. Schwab, medical staff; Meredith R. Johnston, registrar; Warren R. Rainey, surgical staff; Charles Herman Eyerman, medical staff; Harry G. Gredtzer, surgical staff; Hugh McCullough, medical staff; and Nathaniel Allison; First Lieutenants Arthur W. Proetz, Roland F. Fisher, Allan M. Chesney, Frederick B. Abbott, and Philip P. Green, surgical staff, Allan M. Gilbert, Joseph W. Larimore, Levi H. Fuson, medical staff, and Howard H. Bell and Edwin C. Ernst, laboratory section; and First Lieutenants James A. Brown and Fred J. Brockman, Dental Officers' Reserve Corps; with Rev. Carrol M. Davis, as chaplain.



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Major James D. Heysinger, in command, and Major J. M. T. Finney, medical director, of Base Hospital No. 18, Johns Hopkins Hospital, in New York on their way to the front.

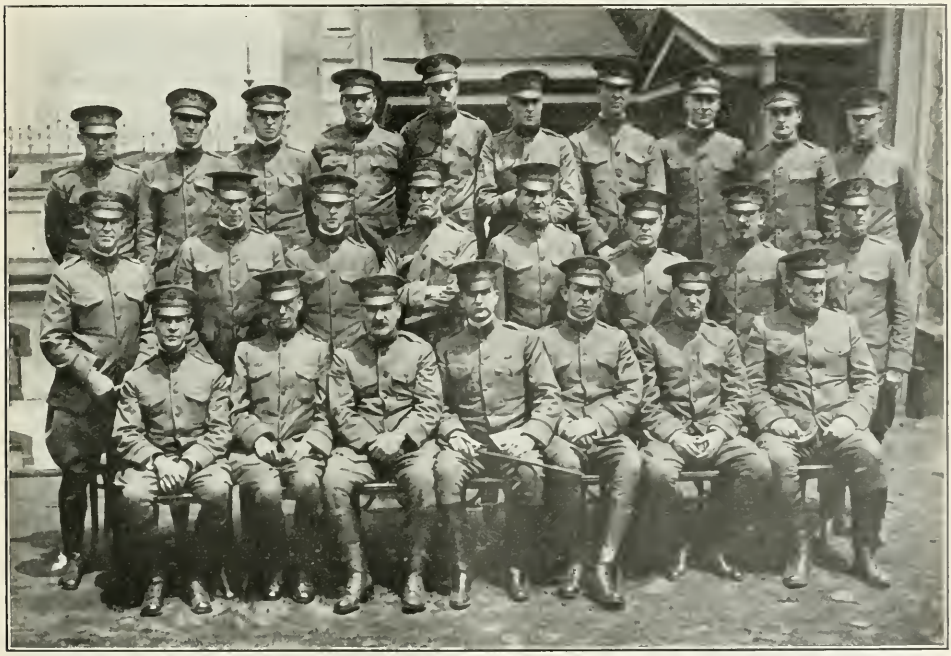
The commissioned personnel of the four Red Cross base hospitals that have completed organization and are under orders to sail is as follows, except as stated, the officers being members of the Medical Officers' Reserve Corps: No. 6, Massachusetts General Hospital, Boston: Major Frederic Augustus Washburn, commanding officer and director; Major Richard Clarke Cabot, chief of medical service; Major Lincoln Davis, chief of surgical service; Captains Roger Kinnicutt, bacteriologist, Zabdiel Boylston Adams, orthopedist, William Jason Mixter and Beth Vincent, surgical, Edward L. Oliver, Richard F. O'Neill, William L. Moss, Adelbert S. Merrill, and Henry Chase Marble; First Lieutenants Harold Grant Tobey, laryngologist; George Clymer, neurologist and alienist; Richard Augustus Hatch, oculist; Wade Stanley Wright and James Howard Means, medical section; George Adams Leland, Jr., surgical; Frederick C. Irving, DeWitt S. Clark, Joseph C. Aub, Alfred L. Binger, and Paul Dudley White; and First Lieutenants William H. Sherburns and William N. Gullifer, Dental Officers' Reserve Corps; with Rev. Henry Knox Sherrill as chaplain.

No. 15, Roosevelt Hospital, New York city: Major Haywood S. Hansell, Medical Corps, U. S. Army, commanding; Captain John H. Trinder, Medical Corps, U. S. Army, adjutant; Captain Henry Ward, Quartermaster Officers' Reserve Corps, quartermaster; Major Charles H. Peck, director; Major James I. Russell, chief of surgical service; Major Rolfe Floyd, chief of medical service; Captain Calvin B. Coulter, chief of laboratory section; Captains Alfred Stillman, Edward F. Kilbane, Gouverneur M. Phelps, Clarence A. McWilliams, and William C. White, surgical section; Captains Harold Barclay and Henry F. James, medical section; Captain Joseph Steiner, röntgenologist; First Lieutenants Henry W. Cave, John E. Williams, Augustus Street, John H. Carlisle, surgical section; Alexander T. Martin and Thomas C. Peightel, medical section; Robert T. Buckley, laryngologist and aurist; Lewis S. Booth, anesthetist; W. B. Hetzel, neurologist; and Ralph A. Hurd, pathologist; and First Lieutenants J. C. Vandervoort and John R. Morrill, Jr., Dental Officers' Reserve Corps; with Rev. Francis B. Barnett as chaplain.

No. 17, Harper Hospital, Detroit: Major Angus McLean, director; Major Preston M. Hickey, chief of laboratory service; Major Henry N. Torrey, chief of surgical service; Captains Roland Parmenter; Lewis J. Hirschman; William E. Spitzley; Alexander Sterling; John C. Dodds, surgical service; George E. McKean, medical service; Robert Owen, bacteriologist, and Walter D. Ford; First Lieutenants Herbert M. Rich, medical service, and Fred C. Buesser, E. J. Gregory, James Breakey, L. L. Belt, C. B. Lockwood, Hampton P. Cushman, Edward J. O'Brien, Duncan A. Campbell, and Alfred D. LaFerte; and First Lieutenants William T. Shannon and Earl C. Barkley, Dental Officers' Reserve Corps; with Rev. Max H. Wallace as chaplain.

No. 18, Johns Hopkins Hospital, Baltimore: Major James B. Heysinger, medical corps, U. S. Army, commanding; Major John M. T. Finney, director; Major Thomas R. Boggs, chief of laboratory serv-

ice; Major George Walker, adjutant; Captains Eveleth E. Bridgman, medical service; William S. Baer, orthopedist; William A. Fisher, surgical service—brain surgery; Bertram M. Bernheim, surgical service; George J. Heuer, surgical service—brain surgery; Clyde G. Guthrie; Walter A. Baetjer, registrar; First Lieutenants Henry N. Shaw and Lloyd B. Whitman, surgical; John H. King, Verne R. Mason, and William M. Happ, medical service; Charles A. Waters, röntgenologist; and L. Wharton, H. B. Eaton, Benjamin S. Kline, V. P. W. Sydenstricker, and H. R. Slack; and First Lieutenants Lucien Brun and Levius Lankford, Dental Officers' Reserve Corps; with Rev. John McDowell as chaplain.



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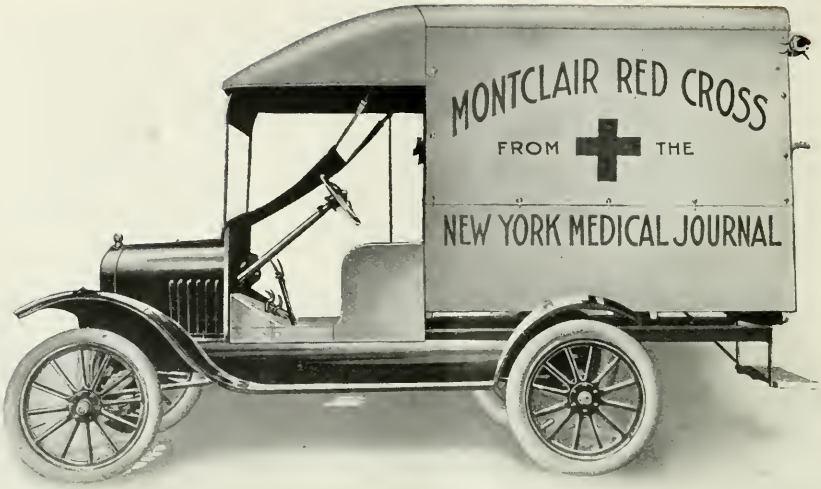
Medical Staff of the Johns Hopkins Base Hospital Unit, Base Hospital No. 18. Front row, reading from left to right: Captain W. A. Fisher, Major T. R. Boggs, Major J. M. T. Finney, Major Heysinger, U. S. A., director, Major Winford Smith, Major George Walker, Captain W. S. Baer. Second row, reading from left to right: Captain B. M. Bernheim, Captain Harvey Stone, Captain W. A. Baetjer, Captain E. W. Bridgman, Captain C. G. Guthrie, First Lieutenant G. J. Heuer, First Lieutenant Lucien Brun (dentist), First Lieutenant C. A. Waters. Third row, reading from left to right: First Lieutenant B. Kline, First Lieutenant V. P. W. Sydenstricker, First Lieutenant J. H. King, First Lieutenant H. B. Eaton, First Lieutenant W. M. Happ, First Lieutenant V. R. Mason, First Lieutenant H. N. Shaw, First Lieutenant L. Lankford (dentist), First Lieutenant H. R. Slack, First Lieutenant L. Whitham.

The twenty-eight Red Cross base hospitals now in process of organization are the following, the name in each case being that of the director: No. 1, Bellevue Hospital, New York, Dr. E. L. Keyes, Jr.; No. 3, Mt. Sinai Hospital, New York, Dr. N. E. Brill; No. 7, Boston City Hospital, Dr. J. J. Dowling; No. 8, New York Post-Graduate Hospital, Dr. Samuel Lloyd; No. 9, New York Hospital, New York, Dr. C. L. Gibson; No. 11, St. Joseph, St. Mary, and Augustine Hospital, Chicago, Dr. A. J. Ochsner; No. 13, Presbyterian and County Hospitals, Chicago, Dr. Dean D. Lewis; No. 14, St. Luke and Mt. Reese Hospitals, Chicago, Dr. L. L. McArthur; No. 16, German Hospital, New York city, Dr. Fred Kammerer; No. 19, Rochester General Hospital, Rochester, N. Y., Dr. John M. Swan; No. 20, University of Pennsylvania Hospital, Philadelphia, Dr. John B. Carnett; No. 22, Milwaukee County Hospital, Milwaukee, Dr. C. A. Evans; No. 23, Buffalo General Hospital, Buffalo, Dr. Marshall Clinton; No. 24, Tulane University, New Orleans, Major John B. Eliott; No. 25, Cincinnati General Hospital, Cincinnati, Dr. William Gillespie; No. 26, State University of Minnesota, Minneapolis, Dr. Arthur A. Law; No. 27, University of Pittsburgh Medical School, Dr. R. T. Miller; No. 28, Christian Church Hospital, Kansas City, Dr. J. F. Binnie; No. 29, City and County Hospital, Denver, Dr. Henry Sewall; No. 30, University of California, San Francisco; No. 31, Youngstown Hospital, Youngstown, Ohio, Dr. C. R. Clark; No. 32, City Hospital, Indianapolis, Dr. E. D. Clark; No. 33, Albany Hospital and Medical College, Dr. A. W. Elting; No. 34, Episcopal Hospital, Philadelphia, Dr. A. P. C. Ashhurst; No. 35, Good Samaritan Hospital, Los Angeles, Dr. J. J. A. Van Kaathoven; No. 36, College of Medicine, Detroit, Dr. B. R. Shurly; No. 37, Kings County Hospital, Brooklyn, Dr. E. H. Fiske; and No. 38, Jefferson Medical College.



New York Medical Journal Ambulance

The A. R. Elliott Publishing Company, Through the Montclair, New Jersey, Chapter of the American Red Cross, Presents a Fully Equipped Ambulance for the French Front

At the meeting of the Montclair, New Jersey, Chapter of the American Red Cross, held at Montclair on Tuesday evening, June 19th, $317,000 was raised for the American Red Cross. This was probably the largest amount of money subscribed for the Red Cross by any city in the United States of less than 25,000 inhabitants, and averaged about $13 per capita for every man, woman, and child in the town.

At this meeting, the A. R. Elliott Publishing Company presented to the Montclair, New Jersey, Chapter of the American Red Cross a completely equipped ambulance of a type which is almost exclusively used on the battle front in France. An illustration of the ambulance appears herewith. In presenting this ambulance, the publishers of the NEW YORK MEDICAL JOURNAL feel that no phase of the world war appeals so strongly to them as does that of the medical department. The publishers of the JOURNAL for the past twenty years have been brought so closely in contact with the medical profession that they feel they are able to appreciate the lofty ideals and the unselfish devotion to duty which animates its members.

The publishers are glad of this opportunity to give tangible evidence of their desire to aid in the emergency which confronts this Nation and its allies. May this ambulance go forward on its mission for humanity to the tune of the Battle Hymn of the Republic and to the chorus of the song the boys sang who have just landed on the shores of France. We read that as they marched off the transports the bands were playing the new marching song of the army. The chorus goes:

Good-bye, dear old Yankee land. Hello, France!
We've sailed across the ocean to make the Germans dance.
They have tried to rule the world with military stuff,
But we come from a country that never takes a bluff.

Correspondence

NEWS FROM WASHINGTON.

Promotion for Medical Officers—Pending Legislation on Military Medicine—Suggestion for Identification of Mentally Deficient Candidates for Enlistment—Hospitol and Ambulance Ships—Criticism of Accommodations for Service Officials at Cavite, P. I.—Bureau of Sanitation Established.

WASHINGTON, *July 3, 1917.*

Physicians serving as members of the army medical reserve corps have been evincing considerable interest in the policy of the surgeon general of the army as to promotion of those on active duty at training camps, recruiting stations, and other places. It has been determined generally that after a reasonable period equivalent to not less than ninety days, the claims of these officers to consideration for advancement might be entertained. However, no hard and fast rule has been adopted, and much will depend on circumstances and individual capacity and fitness.

Prior to enactment of the national defense act of June 6, 1916, all members of the medical reserve corps had the rank, pay, and allowances of first

lieutenant, and while members of that corps could go no higher. That act established in place of the medical reserve corps the medical officers' reserve corps, in which physicians could be appointed to the grades of major and captain, as well as to that of first lieutenant. No appointees holding rank above that of first lieutenant, however, were called into active service prior to the declaration of war, but since then a number of majors and captains have been placed on duty. Most of the members of the reserve corps hold the rank of first lieutenant, but a number of prominent physicians and surgeons, because of their attainments, have been appointed majors and captains, and first lieutenants who make

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Cornell Ambulance Corps just before sailing for Europe on the French liner *Chicago*.

good will be advanced from time to time in the future. Much will depend upon the recommendations of commanding officers in individual cases.

A bill has been introduced and now is pending affecting the promotion of lieutenants in the medical corps of the regular army and of the national guard. The bill provides that such lieutenants shall be eligible to promotion as captains upon such examination as may be prescribed by the Secretary of War. The bill has passed the House. The object of the bill is to amend the present law so as to make a lieutenant in the regular medical corps eligible to promotion to captain during the existing emergency without the requirement of five years' previous service as now prescribed. Under the construction placed upon existing law, it is impossible for a first lieutenant of the medical corps of the national guard to be promoted to captain during the next four years. Another bill now pending affecting medical officers of the army is one that provides that all premedical and medical students now in attendance, or who may hereafter be in attendance, at the various reserve officers' training camps shall, upon expressing a preference, be placed in a medical school to be designated by the surgeon general of the army in which they shall complete their medical studies and thereafter serve in the rank for which they shall have qualified.

The identification of the mentally deficient among candidates for enlistment in the military and naval establishments has been receiving much attention from medical officers in order that such candidates may be prevented from entering the services and future trouble with them avoided. Lately medical officers have received some valuable suggestions from Dr. Henry H. Goddard, director of psychological research of the laboratory of the Vineland Training School, who has suggested a method of individual examination that promises to be effective in detecting those that would prove temperamentally unfit for service. Dr. Goddard says: "The ideal procedure would seem to be to have a psychological examiner at every recruiting station. This is manifestly impossible. There are not enough psychologists in the country and not every psychologist is a practical examiner for medical defect. There are.

it is true, quite a number of teachers who have been trained to administer certain tests and who could probably be trained to do all that would be necessary in the way of testing recruits. But even if we took all available persons there would still be too few to supply all of the recruiting stations. The next question is, Can a set of tests or system of examination be prepared which can be placed in the hands of the recruiting officers and used by them with satisfactory results? I have no doubt that this can be done, though with somewhat variable degrees of satisfaction. There is, however, an intermediate procedure which might possibly prove feasible and, if so, would undoubtedly be far more satisfactory. That would be to have the people who have been trained to make these examinations employed as inspectors or instructors of the recruiting officers. They could then go from one recruiting station to another and in a very short time give the officer such help or suggestions as he might need to give him confidence in his own work, to inform him where he had not comprehended the method, or to correct such errors as he might unwittingly have fallen into. This would be a matter of a few hours, probably a half a day at most, at any one station."

The Navy Department has just arranged for the acquisition of two vessels for conversion into hospital ships to operate in the Atlantic in conjunction with the U. S. S. *Solace*. The work of conversion will be pushed forward as rapidly as possible, producing ships that will be fully equipped in all particulars with the latest facilities for taking care of the sick and wounded of the navy. The dire necessity for ambulance ships continues. The navy possesses now only one of that type, and that donated by a civilian. The American Red Cross probably will provide three, possibly four, ambulance ships, small swift craft that will be utilized in conveying the disabled at sea to the nearest port for admission to hospitals on shore. Under direction of Surgeon General Braisted, the hospital facilities of the navy are being augmented so as to provide a total of 10,000 beds. The larger hospitals, such as that at Norfolk, will each have accommodations for 1,000 patients, and the smaller ones, such as those at New Orleans and Key West, for 250 patients. Of course, the facilities of civil institutions will be used at times when the naval hospitals cannot take care of all the patients under treatment. Surgeon R. C. Holcomb, principal assistant in the naval bureau of medicine and surgery, following inspection of the naval hospitals in the northern section of the country, is inspecting those in the south, including Charleston, Key West, Pensacola, New Orleans, and Gulfport.

There has come to the bureau of medicine and surgery of the Navy Department from Passed Assistant Surgeon W. L. Mann, of the navy, a report criticizing, from a hygienic standpoint, the accommodations available to service people stationed at the navy yard, Cavite, P. I. It appears that most of the present habitations were built by the Spanish officials and are located in the industrial portion of the yard, where the noise from the shops creates nuisance to the occupants. Doctor Mann says:

"To withstand successfully the enervating effects of a tour of duty lasting thirty to thirty-six months in the tropics, comfortable and hygienic quarters are indispensable. It appears, from an economical standpoint, that it would be cheaper for the Government to provide sufficient quarters than to pay commutation for the same. When the question of improvement in health, contentment, and efficiency of the personnel is considered, the Government would unquestionably obtain good returns from any expenditure on quarters. Some of the quarters recently built are not considered adapted to this climate. It is recommended that the Navy Department appoint a board to consider carefully architectural plans and adopt a standard type of construction adapted to the demands of tropical conditions. It appears that concrete double quarters, like those erected by the army at Corregidor Island, would be desirable. It is estimated that wooden structures cost about ten per cent. for maintenance and repairs a year due to climatic conditions and tropical insects —white ants. Notwithstanding a slight initial increase of cost, therefore, it would seem that the concrete buildings of this type would prove more economical in the end, as well as cooler and more sanitary. These remarks are occasioned by my noting the superiority, for tropical conditions, of the structures built by foreigners in China over the usual type seen in the Philippines."

The new bureau of sanitation, with Surgeon J. S. Taylor, of the navy, in charge, and Passed Assistant Surgeon Joseph R. Taylor, of the navy, as assistant, that has been created in the bureau of medicine and surgery of the navy, to look after the increased volume of sanitary statistics and take care of sanitation generally in the naval service, has had attached a number of members of the Public Health Service. Dr. Hugh S. Cummings and Dr. C. Fox have been assigned to the division at Washington. Passed Assistant Surgeon W. M. Bryan, of the marine hospital, Chelsea, Mass., and Surgeon A. M. Stimson, of the bureau of hygiene and labor, Washington, will be stationed at Newport, R. I. Among the other members of the Public Health Service to be detailed to the division are Senior Surgeon Fairfax Irwin, Philadelphia; Surgeon G. B. Young, Norfolk; Senior Surgeon W. J. Pettus, Charleston, S. C.; Senior Surgeon G. M. Guiteras, marine hospital, Key West, Fla.; Surgeon M. J. White, St. Louis, to be stationed at New Orleans; Senior Surgeon L. G. Williams, marine hospital, San Francisco, and Surgeon R. J. Lloyd, Seattle, Wash.

The Red Cross War Relief Fund.—Latest tabulations by the American Red Cross show that Delaware led all States in per capita contributions to the Red Cross War Fund, with a rate of $5. Figures for other States follow: Connecticut, $2.05; Ohio, $1.81; Massachusetts, $1.50; Rhode Island, $1.43; District of Columbia, $1.37; New York (outside of New York City), $1.28; Colorado, $1.27; Michigan, $1.18; Pennsylvania, $1.14; California, $1.12; New Jersey, $1.10; Missouri, 95c.; Montana, 94c.; Illinois, 88c.; New Hampshire, 84c.; Oregon, 82c.; Maine, 75c.; Utah, 73c.; Idaho, 71c.; Indiana, 40c.; Wisconsin, 48c.; Kansas, 48c.; Mississippi, 47c.; Maryland, 41c.; Louisiana, 40c.; Iowa, 40c.; Tennessee, 30c.; Vermont, 30c.; Arizona, 38c.; West Virginia, 36c.; Virginia, 34c.; Oklahoma, 27c.; Florida, 25c.; Texas, 25c.; Nevada, 21c.; Kentucky, 16c.; Arkansas, 15c.; Alabama, 15c.; North Carolina, 12c.; Georgia, 12c.; North Dakota, 11c.; New Mexico, 10c.; South Dakota, 9c., and Hawaii, 3c.

Editorial Notes and Comments

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A DOCTOR NEEDED IN THE CABINET.

Why is there still a depressing lack in the medical forces needed for the war service? Why is the President with his authority and Congress with its ample means waiting to equip a strong medical service which is not forthcoming? These are practical burning questions of serious import in the face of our oncoming national task.

Not the least of the task of preparing for the actual work of war and of carrying it forward falls upon the medical profession. Their share is the tediousness of slow preparation of the camp, the heavy ennui of camp life, the feverish activity in the thick of the fray. They bring up the rear after battle, and even when war is done their work continues. To them alone fall the crucial tasks of the examination for fitness of service, the making and keeping fit through camp hygiene and personal medical attention, and the preservation of health and the care of the wounded at the front, which will be followed by a long constructive period of responsibility for the men disabled in body and mind when the war is over. To all of this the medical profession is awake as never before. The enormous resources of knowledge, technic, and freedom of opportunity which modern science and modern society have put at their disposal give to them such a comprehensive outlook upon their task. They are eager to get to work, eager to hand all this to the service of their Government in its great undertaking. And yet there is something lacking in the means of bringing this willing force into organized activity.

Have we not to look into an attitude which has made such a condition a foregone conclusion? Too long the Government has shared the popular or rather the very egoistic attitude toward medical men. It has held itself aloof from acknowledgment of the immeasurable constructive part which this great profession should have long been taking in national affairs. The men of the profession have made themselves felt at least individually and silently, but they have been restricted as they are now because the Government has been loath to admit them to a distinctive and authoritative voice in the affairs of health. It has excluded them from the important affairs which it has apparently considered of too great moment in its own eyes for the medical man. Therefore now in its stress and need, when the doctor is indispensable in the largest way, it is aghast at the inability to command the forces of the medical profession as it can its military force. It is helpless, and this, too, from its own undoing.

The Government, like each individual of this free land to whom it is responsible and whom it represents, must awake and arouse itself at once to consider the ancient, egoistic point of view from which medicine and its service are approached. So long as the individual is well and the Government thrives in soundness and prosperity, almost anything is good enough for the doctor. Let him go his way quietly and keep his hands off important nationwide affairs. A selfsufficient attitude which arises from an inner, mostly unconscious assertion of selfsecurity and superiority, of which we hardly allow ourselves to be aware, spurns the doctor. No exhibition of weakness will permit such a one and such a governing body to admit that weakness, incapability, unsoundness which the seeking of medical aid would imply. Let, however, the individual fall ill, let the wounds and savage mutilation of war and its violent upheavals attack the nation, and the sense of need, the other side of our yet childlike nature, cries out for help, and cannot understand why the service it has too scornfully overlooked is not at its hand in fully equipped available force.

Even then, Nicodemus like, it creeps to the source of aid at night, to learn wisdom and gain the needed support. Let the Government, however, come to

realize this its obligation and its opportunity to enlist itself with the medical service and the medical profession to its aid, and it will find willing accord and eagerness to enter into the greater service which other branches of work already enjoy. It will find this great body of men ready on their part to be enlisted with the Government.

How can men volunteer under such lack of organized recognition? Who is responsible for their services, the offering of them or the getting of them into line for the best effectual work of which such a body of trained men stand ready, waiting for the directed opportunity to serve their country and the greater humanity? When the Government comes forward with an authority which it alone can put into the hands of the medical service, as of a body to be trusted and to be given opportunity fitted to the skill and training and intense humanitarianism which long experience has ingrained within them, then results will follow. Then enlistments will be definite and directed, responsibility will be shouldered by those to whom it belongs. There will be no lack of sober spirit on the part of the medical men to accept from their Government this responsibility as at last rightfully theirs, for no selfaggrandizement and glory, but for that service which they have long awaited suitable opportunity to offer. They are ready in the truest spirit of service, taught by the weakness and need that has always sought them out, even if it was by night, to devote themselves sincerely to the health and comfort of the fighting men and to the broader, more far reaching constructive work in which theirs must be one of the larger part.

PHYSICAL DEFECTS OF RECRUITS FOR THE ARMY AND THE MILITIA.

While physical defects of applicants at recruiting stations during normal times may not attract the attention of any but the examiners, the results of the examinations now conducted, and especially those in the near future, should form the subject for serious consideration. We are practically on the eve of a national health census when we take stock of the potential health capital of that portion of the race that is reaching, or has already reached, its greatest physical development. It will constitute a sanitary index of the very basis of our social fabric.

The time is appropriate for judgment as to whether our public health activities, in the broadest sense of the word, have kept pace with our tremendous economic advance, and whether physicians have exerted the necessary influence in bringing up a healthy young generation that shall be able to meet all the exigencies of this crisis. We all feel certain that the gigantic struggle going on now is destined to lead to a "revaluation of all values" in every domain of human endeavor and to give birth to new ideas or to a radical revision of old conceptions. In this revaluation the vast domain of medicine shall have its proper share. At present, however, we are permitted to draw more or less definite conclusions from figures as presented by various military examiners, and thus formulate our own opinions as to the whys and wherefors of the physical defects in the recruits.

Dr. H. D. Orr and Dr. C. A. Costello (*American Journal of Public Health,* May, 1917) present in an illuminating way some highly interesting figures that may be a painful revelation to many of our readers whose attention may not have been hitherto directed to this subject. According to one of the authors, "Ordinarily two or three out of every four applicants for the regular army are rejected as physically unfit." So great and various are the demands of modern warfare, and so frequently are the soldiers exposed to hardships and privations, that none but those possessing a robust constitution and fully developed resistance to fatigue and disease can make up an efficient army. This high health standard should be coupled with a well balanced psychical outlook and the proper mentality, for the soldier of a free nation, while obeying implicitly the orders of his superior officer, should also be able to think for himself and have a clear conception of his duties.

Of the physical shortcomings among the recruits Doctor Costello puts the first and the commonest as defective vision; fully thirty-five per cent. of recruits are rejected on this account. The navy does not accept men who wear glasses, although it would seem that corrected low myopia may, and frequently does, give almost as good vision as emmetropia, which by the way is quite rare. Dr. Sydney Walker (*Ophthalmic Record,* May, 1917) states as a fact in two cases of his personal knowledge that myopes with uncorrected vision of 5/20 in both eyes and corrected vision of 20/20 plus are the best rifle shots in the Army and Navy. Another interesting point brought out by this author is that hypermetropes who pass the test while well and strong will, after some months of trench life, find vision greatly reduced in the inability to maintain accommodation. It has also been found that miners' nystagmus is exaggerated by military service; hence men with this tendency should be excused, especially in mining districts.

The second chief defect as a cause for rejection is flat feet. The author distinguishes between the physiological flat foot which is characteristic of

some races, especially those who do not wear shoes, and which is often seen in members of the white race as well, and the foot in which the arch is broken down. A man with the latter condition is useless for active service either on land or at sea.

The third important cause for nonacceptance is defective teeth, which forms twenty-seven per cent. of all rejections. In this number are considered teeth that had been neglected beyond any possibility of repair. The minimum requirement is twenty sound teeth, of which there must be four opposing molars and four opposing incisors, with crown and bridge work counting as sound—a fair minimum, indeed! We are here reminded that in fifty-eight per cent. of the total number of school children examined were defective teeth found, and who can deny that if these defects had been corrected during the school age many healthy citizens and acceptable recruits would have been saved for the nation? The authors' surmise that defective teeth and defective vision frequently go together is fully in accord with the modern conception of focal infection, and should serve as a still further incentive for an early correction of dental defects.

These are the three most important causes for rejection of recruits. In addition, defective hearing and color blindness play important rôles. Color blindness is a great drawback in service at sea, where a mistake in signalling may have disastrous consequences. Hernia and hydrocele are common among recruits, and both are causes for permanent rejection. As the majority of these cases, as well as hemorrhoids, are operable, the applicants may again offer themselves after operation. Seventy-five per cent, of such men are enlisted in the navy.

COMPULSORY HEALTH INSURANCE.

At the recent meeting of the Section in Preventive Medicine and Public Health of the American Medical Association, compulsory social insurance was the topic of extended and impartial discussion. A resolution was adopted which reads as follows:

Resolved, That after full discussion and careful consideration of the subject, the Section in Preventive Medicine and Public Health of the American Medical Association hereby instructs its delegate to the House of Delegates of the American Medical Association to oppose the scheme for compulsory health insurance in every way possible.

This action was taken after eighteen months of careful deliberation. This measure was proposed by the American Association for Labor Legislation, a group of individuals who represent not labor, but organized philanthropy and the social uplift. The Section in Preventive Medicine is composed of two groups. One of these consists of general practitioners and specialists who are thoroughly conversant with the topic of social insurance, many of them having a greater professional knowledge on the subject than have the proponents of the bill in question. These men were almost unanimous in favoring the resolution. There is also in the section a group of men employed on salary in public and other service, some of whom were found aligned against the resolution. The strong sentiment displayed in opposition to compulsory social insurance was directed against the principle of compulsion in social insurance as a general proposition and against the so called Mills bill in particular. Although the members of the section are physicians who have special knowledge and experience of social insurance, it has required no specialist to pass upon the demerits of the Mills bill. Careful reading of this bill by any thinking layman is enough to be convincing of its un-American bureaucratic tendencies and economic irresponsibility. It violates every principle of sound insurance. Insurance is essentially a matter of indemnification for loss. This bill, however, is a poorly conceived measure for poor relief, masquerading in the disguise of preventive medicine.

CASUALTIES IN THE MEDICAL CORPS.

Mark Twain's death having been reported, he corrected the rumor by a cable from London, reading, "Report of my death grossly exaggerated." The British medical officers are in much the same situation as Mark Twain, for grossly exaggerated reports have been circulated as to the deaths among them. One report in a Washington newspaper had it that over sixty thousand officers had been lost by the Royal Army Medical Corps. We took occasion to correct this in our issue of June 23d, on the authority of Colonel T. H. Goodwin, of the Royal Army Medical Corps. This correction is also mentioned in an address by Colonel Goodwin published in this issue. Colonel Goodwin cabled to the British War Office for definite information concerning the casualties among the British medical officers at the request of Captain Robert H. Halsey, of the Officers' Reserve Corps, Medical Section, and has received the following official statement by cable:

The total casualties among medical officers of the British forces on the western front, from the commencement of the war until the present date, June 25th, are as follows: Killed, 105; died of sickness, 62; wounded, 704; total, 964. The total battle casualties (964 — 62) are 902.

As pointed out by Captain Halsey, in a letter to the New York Medical Journal, it appears that only about twenty per cent. of the injured died, the

relation between the killed and injured being about the same as given in *The Medical Service in Campaign* by Straub. Since the total force of medical officers in the British Army is only 12,000, the absurdity of the statements hitherto circulated regarding casualties in the service are readily apparent. If the battle casualties, 902, are equally divided among the three years the war has lasted, we will have a casualty list of about 300 annually, out of a force of 12,000, or only about two and a half per cent. There is no disposition to detract from the valor of the medical department in publishing these figures and in directing attention to them. The fact that the casualties are less than previously reported in no wise diminishes the credit which is due to the physicians who are willing to take that risk in addition to the loss entailed in giving up their practices, but we wish to emphasize that the risk incurred by the medical officer is not at all so great as has been reported.

TYPHOID FORMS IN THE ITALIAN ARMY.

The occurrence of typhoid infection in the Italian army has given impetus to certain significant studies in regard to methods of diagnosis and to prophylaxis through vaccination. *Lo Sperimentale* (lxxi, Nos. 1, 2, May, 1917) has published reports of a number of these researches. The methods of research were those of blood culture, seroagglutination, and bacteriological examination of feces. The prevalence of a mixed type of agglutinative reaction bespeaks the necessity of a mixed antityphoid serum for vaccination. In certain investigations there was found a predominance of the infection caused by the paratyphoid bacillus A. Vaccination here included serum antagonistic to the typhoid bacillus and the paratyphoid B, but not that directed against paratyphoid A. Blood culture tests, serum diagnostic tests, and bacteriological examination revealed varying proportions of the paratyphoid bacilli A and B with other anomalous ones and of the typhoid bacillus. The agglutination test revealed the presence of A, B, and T in certain cases; in others of B and T; in others any one of these alone.

Agglutination did not manifest itself in the initial stages of the disease but later confirmed for the most part the bacteriological findings, which were positive from the first. In the more advanced stages of the disease, therefore, serum diagnosis is a valuable test. Blood culture and serum diagnosis recommend themselves likewise in the rapid work necessary during brief hospital visits and the limitation of facilities required for the more extensive work of bacteriological investigation.

In spite of the doubt cast over agglutination tests in regard to the findings of antibodies, the presence of agglutination has been found in a high percentage of those who have been vaccinated. Success in vaccination depends upon the strength of the solution, the regulation of the time of the injections, and some knowledge of the individual anamnesis. The careful attention to these points as well as the use of the mixed serum has brought better results in vaccination than were observed at the beginning of the war. Agglutination is still positive many months after vaccination.

The clinical effects of vaccination are evident in the mildness of the form of the disease which prevailed and the very low mortality. The course of the disease was usually three or four weeks and there was marked absence of complications and of relapse. Nor was there the extreme emaciation and weakness which usually follow the disease. The most serious cases were usually from the typhoid infection, sometimes from that of paratyphoid B. There was no marked nervous disturbance indicative of severe intoxication. The temperature ran usually a rather irregular course with marked remissions but without very great rise. In some cases the temperature fell gradually.

Infection was doubtless due to the condition of the soil and the water supply and was transmitted from station to station probably by contact, since the principal foci of infection were in adjacent regions. The prevalence of both the paratyphoid forms A and B are of etiological, and therefore prophylactic, importance. The form A has thus far been neglected in vaccination, but both this and the anomalous paratyphoid forms found in a certain number of reactions cannot be ignored.

EFFECT OF SUBMARINE DUTY ON THE CREW.

Little has been published regarding the effect of submarine duty on the crew, partly because of lack of knowledge on the subject and partly because the governments that have had the greatest experience in submarine work have purposely avoided giving publicity to such information that they may have. Therefore, the study of this subject made by Assistant Surgeon Walter W. Cress, U. S. N., which appeared in the June number of *The Military Surgeon*, will be read with much interest. Doctor Cress records here the observations made on board submarines at the naval station at Pearl Harbor in Hawaii. Some of the findings were rather a matter of surprise, as for instance the fact that the number of bacteria and moulds present in the air of submarines, while running awash and submerged, is less than is usually found in the air in dwellings and in battleships. He also found that the carbon dioxide

present and the excessive heat while submerged are not so deleterious in their effects as is the high degree of humidity. Long continued service in submarines probably tends to increase the blood pressure and inhalation of the fumes of fuel oil may produce a mild form of albuminuria. One of the interesting and regrettable effects of submarine service is the production of partial deafness. At first the symptoms which manifest themselves on submergence disappear on coming to the surface, but after a few months a bilateral partial deafness results which does not yield to treatment.

TOBACCO IN THE TRENCHES.

Some of the clergymen of Los Angeles object to the distribution of tobacco among the soldiers at the front by the Red Cross Society. While the grounds for this objection are not stated in the newspaper reports they can easily be inferred. It is hardly likely that they will carry any weight with the Red Cross authorities. The intense nervous strain imposed by the conditions at the front in the present war requires that everything possible should be done to allay nervous irritation. Amusements for the men when relieved of duty at the immediate front are recognized as an important factor in preventing neuroses. Many of the men in the army are confirmed smokers, and to deny these men tobacco is to induce a degree of nervous irritation which will materially militate against their efficiency. It would be the height of folly, both from a medical and a military standpoint, to deny tobacco to the men at the front. Much to their credit, the women of Los Angeles who are prominent in relief work practically unanimously favor providing tobacco along with other comforts for men at the front.

ENGLISH HOSPITALITY TO AMERICAN MEDICAL OFFICERS.

The NEW YORK MEDICAL JOURNAL takes great pleasure in transmitting the cordial invitation of the Royal Society of Medicine to "the commissioned officers of all the naval and military services, when in London, to make free use of the Society's rooms, which include writing, conference, smoking, tea, and dressing rooms, and to use the library for reading and reference. They are also welcome to attend the meetings which are held for the reading of papers, clinical demonstrations, and for discussions." The secretary of the Society, Mr. J. W. Y. MacAlister, says: "Nothing would please us better than to see it [the house] crowded with our American friends." The acceptance of this hearty hospitality should be a great pleasure and privilege to American medical officers going abroad.

News Items

Medical Officers Transferred from the Philippines.—The following named officers of the Medical Corps are relieved from further duty in the Philippine Department and will proceed to the United States on the first available transport: Major John L. Shepard, First Lieutenant Charles L. Gandy, First Lieutenant William W. Vaughan.

The Health of the Army.—Surgeon General Gorgas reports that the health of the army is normal. Few complaints of any kind have been received, and no outbreaks of infectious diseases have been reported.

Fourth of July Injuries.—A total of ninety-three cases, all of minor injuries, due to the Fourth of July celebrations, were treated in hospitals in Manhattan and the Bronx. A large majority of the patients were children hurt playing with firecrackers and toy pistols.

Quarantine Transfer Postponed.—The transfer of the Quarantine Station on Staten Island to Federal jurisdiction, which was scheduled to take place on July 1st, on payment by the United States of $1,395,275, has been postponed until more important matters have been got out of the way.

Knights of Columbus to Send an Ambulance Unit to France.—It is announced that the Knights of Columbus are preparing to send an ambulance unit to France. Ten ambulances, two motor trucks, and a touring car have been obtained, and members of the organization have volunteered their services to man the ambulances.

A Directory of Health Authorities.—A directory of the State and insular health authorities of the United States for the year 1917 appears in the June 29th issue of *Public Health Reports*, issued by the United States Public Health Service, Washington, D. C. The directory is compiled from data furnished by the respective State and insular health officers.

New Narcotic Law for New York.—Notice has been sent to physicians, dentists, druggists, and others handling or dealing in narcotic drugs, directing attention to the provisions of the new law which went into effect on July 1st. It is important that this notice should receive prompt attention, as failure to comply with the requirements of the law is punishable by fine and imprisonment.

The Rockefeller Institute War Hospital.—Dr. Alexis Carrel, who is now a major in the French Army Medical Corps, returned to New York on July 4th to take charge of the military hospital which is being constructed by the Rockefeller Institute for Medical Research, on the grounds of the institute at Sixty-sixth Street and Avenue A, New York. The hospital will be equipped with 100 beds, and demonstrations will be given of the surgical methods successfully applied in the military hospital at Compiègne, France.

Subcommittee on Tuberculosis Named by Council of National Defence.—Dr. Hermann M. Biggs, state commissioner of health of New York, is chairman of a subcommittee on tuberculosis appointed by the general medical board of the Council of National Defence. Other members of this special committee are: Dr. John W. Trask, of the United States Public Health Service; Dr. George T. Palmer, of Springfield, Ill.; Dr. Charles B. Grandy, of Newport News, Va.; Dr. E. R. Baldwin and Dr. Lawrason Brown, of Saranac, N. Y., and Mr. Homer Folks, of New York.

Niagara County Tuberculosis Hospital.—Final plans for the new Niagara county tuberculosis hospital have been sent to Albany for the approval of the State Department of Health. They provide for an administration building and two pavilions with a capacity of ninety-two beds. The estimated cost is $100,000. The old county hospital, which is to be made an annex of the tuberculosis hospital and be opened for patients pending the building of the tuberculosis hospital, has not yet been moved from the old county almshouse farm to the new hospital site.

Health of the Navy Reported Excellent.—Surgeon General Braisted has authorized this statement: "Reports and returns from all naval stations, including the fleets and various ships, both at home and abroad, indicate no unusual health conditions, and, in general, show that the health of the navy for the week is excellent. The epidemic diseases of various types that existed during the past few months have almost disappeared, most of the patients in the hospitals being convalescents awaiting final disposition, with here and there a few cases of this type marking the disappearing incidence of local infectious areas."

Assigned to Duty in Washington, D. C.—The following named officers of the Medical Reserve Corps are relieved from duty at the medical officers' training camp, Fort Benjamin Harrison, Ind., and will proceed to Washington, D. C., and report in person to the commandant, Army Medical School, Washington, D. C., for a course of instruction:

Captain Max A. Almy, First Lieutenants Herbert A. Brown, George S. Silliman, Linwood M. Gable, Harry H. Hammell, Thomas K. Davis, Francis T. Duffy, Fred S. Wright, Jesse L. McElroy, Frederick C. Smith, George H. Robinson, Charles H. Watt, Maurice S. Redmond, Pierre Bergeron, Gilbert S. Osincup, James H. Austin, William D. Anderson, Samuel H. Richman, Nathaniel P. Brooks, Paul S. Hill, Henry E. Keely, Samuel Miller, Charles W. Maxson, James L. Cobb, Charles C. Crouse, William T. Fenker, Rosewell T. Pettit.

Public Health Officers Detailed to Duty in Navy Department.—Surgeon General Braisted, of the United States Navy, has made the following assignments of the surgeons of the Public Health Service detailed for duty with the new Division of Sanitation, Bureau of Medicine and Surgery, Navy Department:

To headquarters, Washington, D. C., Surgeons Hugh Cumming and Carroll Fox; to naval districts—first, Passed Assistant Surgeon W. M. Bryan; second, Surgeon A. M. Stimson; fourth, Senior Surgeon Fairfax Irwin; fifth, Surgeon G. B. Young; sixth, Surgeon W. J. Pettus; seventh, Surgeon G. M. Guiteras; eighth, Surgeon M. J. White; ninth, tenth, and eleventh, Assistant Surgeon R. R. Spencer; twelfth, Senior Surgeon L. L. Williams; and thirteenth, Surgeon B. J. Lloyd.

Surgeon Cumming and Surgeon Fox have made a thorough inspection of the new Marine Corps camp being constructed at Quantico, Va.

A Sanitary Corps for the Army.—Secretary of War Baker has approved an order creating a sanitary corps under the Medical Department of the Army which will include various classes of experts in sanitation, bacteriology, sanitary engineering, and men skilled in the supply, transportation, storage, etc., in connection with medical department work. Creation of this corps will make possible taking over intact hospital and ambulance units already organized in France which, under the law, can not be incorporated in the Medical Corps, to which the law authorizes the appointment of only graduates in medicine. It will also make it possible for the Medical Corps to make use of other trained men not graduates in medicine. The total number of officers in the corps may be approximately equal to, but not exceed, one for every 1,000 of the total strength of the military forces authorized from time to time pursuant to law. There will be no grade in the sanitary corps above that of major and no officer of the Medical Corps will be appointed in the sanitary corps. The number in the several authorized grades of the sanitary corps will be proportional to the number authorized by law for the corresponding grades of the Medical Corps.

A Special Red Cross Commission to Russia.—Mr. Henry P. Davison, chairman of the Red Cross War Council, announces that a special commission, headed by Mr. William B. Thompson, of New York, and Dr. Frank S. Billings, will be sent to Russia to make an extensive study of the needs of the nation in order to determine how American relief on a large scale can be best administered in that country. The commission will carry with it a quantity of medical supplies and surgical instruments for distribution to hospitals, institutions, and Red Cross organizations in Russia. There will be twelve men in the commission, all experts in problems of medicine, public health, and social service. Mr. Raymond Robins, of Chicago; Dr. D. J. McCarthy, professor of public health at the University of Pennsylvania, and Dr. George C. Whipple, professor of sanitary engineering at Harvard University, will accompany the commission as its advisers on problems of sanitation and public health. To deal with general medical problems the commission will have the services of Prof. William S. Thayer, of Johns Hopkins University; Prof. C. E. A. Winslow, of Yale University, and Dr. Wilbur E. Post, of Chicago. The commission will also make a study of Russia's food supplies.

Red Cross War Council Appoints an Advisory Committee to Deal with Problems of Sanitation and Public Health.—Broad plans for dealing with the problems of sanitation and public health arising out of war conditions abroad and in the United States have been announced by the War Council of the American Red Cross.

To provide expert advice for the council in dealing with these problems, the war council also announced the appointment of a medical advisory committee, composed of leading sanitarians and public health authorities of the country.

The membership of this committee is as follows: Dr. Simon Flexner, director of the Rockefeller Institute, chairman; Dr. John W. Kerr, Assistant Surgeon General, United States Public Health Service; Dr. Herman M. Biggs, director of the New York State Department of Health; Dr. William H. Welch, dean of the School of Hygiene, Johns Hopkins University; Dr. Frank S. Billings, professor of medicine, University of Chicago; Dr. M. J. Rosenau, professor of preventive medicine, Harvard University; Mr. Wickliffe Rose, director of the International Health Board; Dr. Victor C. Vaughan, professor of hygiene, University of Michigan; Dr. Charles V. Chapin, department of health, Providence, R. I.; Dr. Richard P. Strong, professor of tropical medicine, Harvard University; Dr. Richard M. Pearce, professor of research medicine, University of Pennsylvania. Ex-officio members of the committee will be: Colonel Jefferson R. Kean, director general, department of military relief, and Dr. T. W. Richards, assistant director general, department of military relief. Permanent offices for the medical advisory committee will be opened in the Red Cross headquarters in Washington, in charge of Dr. Richard M. Pearce, who will act as secretary.

Under the plan of the war council its medical advisory committee will be prepared to cooperate, should the assistance of the Red Cross be desired, with the medical authorities of the Army and Navy in matters relating to the health of the armed forces of the United States both abroad and at home. Its services and advice will also be available in matters of health and sanitation which are outside state or federal aid.

The chief sphere of work of the medical advisory committee will be in connection with the plans of the Red Cross War Council for European War Relief. A Red Cross commission, headed by Major Grayson M. P. Murphy, is now abroad studying conditions in France and other allied countries. Headquarters for the commission are open in Paris, and on its reports the war council will direct American relief activities.

Two of the main problems confronting the commission, and which will at once engage the attention of the medical advisory committee, are the spread of tuberculosis and children's diseases in France. There are more than 800,000 cases of tuberculosis in France. Every resource of America must be enlisted in combating this plague, not merely for humanitarian motives but to protect the health of American troops abroad.

Additional medical problems have been brought about because of the thousands of war orphans in France. Because children have been deprived of mothers and fathers and undernourished physically, there has been a great spread of children's diseases in France.

Where necessity exists, or on invitation, the medical advisory committee will also undertake investigations into health conditions in foreign countries and the United States. Every effort will be made to prevent the spread of epidemics and to help maintain local standards of health following the withdrawal of doctors and nurses from communities for war service. This service will be undertaken not only in the Army encampment but elsewhere in cooperation with the United States Public Health Service.

Dr. Richard P. Strong, who is a member of the committee, was head of the Red Cross forces which stamped out the typhus epidemic in Serbia two years ago. Doctor Rose was the head of the Red Cross commission which two years ago investigated relief conditions in Poland, while Doctor Biggs has already conducted an investigation into tuberculosis in France for the French Government.

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.,
Philadelphia.

(*Continued from page 1213.*)

Of the drugs in common use as diffusible stimulants, camphor and the ammonium compounds have already been considered in this series of articles. The relative inexpensiveness of the preparations yielding ammonia, especially when used in nonalcoholic solutions, has been shown, the cost of circulatory stimulation by such solutions being no greater than that which attends the hypodermic use of strychnine, the least expensive of the alkaloid stimulants. There remain to be mentioned, in the group referred to, ether and alcohol.

Each of these agents is believed, when employed for purposes of stimulation, to act in large degree in a reflex manner, the irritation caused in the area of contact with the tissues, whether subcutaneous or oral and gastric, being so transmitted from the peripheral sensory terminals to the centres and nervous system as a whole as to excite increased activity in various structures, including the circulatory organs, to which an efferent nerve supply is distributed. A psychical action is also credited with being a factor in whatever stimulant effect results, but this must necessarily vary to a marked extent according to the individual concerned, his condition at the time, and attendant circumstances. As for the direct actions of the drugs on the circulatory organs after absorption, variation is again to be expected, and the resultant effects are, in part, not such as would correspond precisely to the term stimulation.

According to most experimenters who have studied the action of alcohol when perfused through the isolated mammalian heart, including Dr. C. C. Lieb, who presented a paper on this subject at the recent meeting of the American Medical Association, alcohol in concentrations sufficient to induce any effect at all, nearly always causes depression, rather than stimulation, of the heart muscle, the work of which in Lieb's experiments was often reduced by nearly one third. The statement frequently made that an exhausted heart may be directly stimulated by alcohol owing to the nutritive, fuel supplying property of the latter seems, at first sight, weakened by the further observation of Lieb that exhausted hearts are, like normal hearts, regularly depressed when fluid containing a sufficient concentration of alcohol is perfused through them. That such experiments on the isolated heart do not reproduce clinical conditions under which alcohol is used, however, is manifest—a fact further borne out by the decrease in heart rate generally noted in Lieb's experiments, which contrasts with the increased rate typically observed when alcohol is administered in the living human subject. The important reflex effects of the drug are excluded in experiments on the isolated heart, as is also the even more important clinical action of the drug on the bloodvessels. Many will agree with Dr. S. Solis-Cohen that from the clinical standpoint alcohol in moderate amounts does increase the force and rate of the heart. Whatever the final conclusion as regards the direct effect of the drug on the heart muscle, the fact remains that in therapeutic doses of five to twenty-five c. c., alcohol generally causes a slight rise in the heart rate, together with a constriction of the splanchnic vessels, a rise of the systolic blood pressure, and an obvious dilatation of the skin vessels. According to Sollmann, the amplitude and force of the pulse are, as a rule, somewhat increased by such doses, together with the mass movement of the blood, the cardiac output, and the efficiency of the circulation in general. These effects reach their height in about half an hour and pass off in an hour or two. In earlier experiments (1915) on the human subject, Lieb found that five to ten c. c. doses of whiskey, given concentrated, usually caused a slight reflex rise in the systolic and diastolic blood pressures, with return to normal in less than half an hour; where the same amounts of whiskey were given in diluted form, however, these effects were practically absent, thus apparently showing that, with the small doses employed, dilution prevents sufficient impression being made on any given area of the gastric mucosa to awaken a reflex response. Again, Brooks (1910) observed that in unanesthetized animals a slight rise in blood pressure could be produced by the mere introduction in the mouth of an amount of alcohol which had no effect when placed in the stomach through a gastric fistula.

In addition to its effects on the circulation there is definite evidence that alcohol in suitable doses exerts both a reflex and a direct stimulating action on the respiratory centre. The quantity of air respired may be doubled (Sollmann), and the fact that some respiratory stimulation is produced even during sleep excludes psychical and environmental influences as essential factors in its causation.

As for the effects of ether when used as stimulant, these may be said to correspond, in a general way, to those of alcohol, though precise details concerning the action of small doses have not been observed as completely as in the case of the latter agent. The same reflex effects are produced, although more rapidly and evanescently than by alcohol, and a moderate direct stimulation of the vasomotor centre and more pronounced exciting action on the respiratory centre may also occur.

Turning to the expense aspect of the question, in so far as this affects the relative availability of the various diffusible stimulants, one notes that alcohol, in a dose of 2.5 fluiddrams, is about eight times as expensive as a thirty minim dose of ether, about twice as expensive as a sixty minim dose of spirit of ether—32.5 per cent. of ether—about four

times as expensive as a thirty minim dose of aromatic spirit of ammonia, and about fifty times as expensive as a five grain dose of ammonium carbonate, or a fifteen minim dose of ammonia water. The latter agents, which thus constitute the cheapest diffusible stimulants for oral use, are peculiar in that their action is almost, if not quite, exclusively reflex, but this does not diminish their efficiency and availability under most circumstances. As Sollmann remarks, ammonia is one of the most active agents for exciting the medullary centres reflexly and there would seem to be no reason why for this purpose it should not be given preference over the more costly alcohol and ether, unless the additional direct actions of the latter agents on nerve centres or their special effects on the peripheral vessels should appear desirable in individual cases. For hypodermic use, ether is available as a reflex stimulant, while ammonia is held excessively irritating; but externally effectual yet inexpensive physical measures, such as alternate hot and cold affusions or electric stimulation of the sensory terminals, can often be advantageously substituted for drugs. On the whole, alcohol and ether can, it would seem, be generally dispensed with as diffusible stimulants, exceptions occurring where a change in the distribution of the blood—a partial shifting from replete internal vessels to those of the skin, e. g., after exposure to cold —is considered advantageous, or the emergency is such as to indicate the use of all available measures. Under these conditions, the expense of giving alcohol alone could, where many subjects come under observation, be considerably reduced by combining with it a small proportion of ether, as in the official spirit of ether. The compound spirit of ether, Hoffmann's anodyne, practically identified in action, is no longer recognized in the U. S. Pharmacopœia, though described in the National Formulary.

(To be continued.)

Tetanus.—H. R. Dean (*Lancet*, May 5, 1917) draws his deductions from the careful observation of twenty-five cases of tetanus, occurring mainly in men who had received at least one prophylactic dose of antitoxin at the time of the first dressing of their wounds. The effect of the administration of such a prophylactic dose is generally to prolong greatly the incubation period and to delay the progress of the spread of symptoms when they do develop. Five of the cases were mild and were treated by the intramuscular injection of the antitetanus serum, the initial dose having been 10,000 U. S. A. units followed at three day intervals by two doses of 5,000 units. All of these patients recovered. Six were treated with antitoxin given intrathecally, one dying of tetanus, two probably of other infections, and the other three recovering. Fourteen received the serum intravenously and apparently much the best results were secured by this mode of administration, both as to the relief of symptoms and in the reduction of mortality. The serum was given in single doses ranging up to 30,000 units, representing from 120 to 190 mils of fluid. In five of the cases the injection was followed by an urticarial rash within a few moments; in two there was edema of the eyelids. No other anaphylactic symptoms were encountered. The argument in favor of this method, aside from its seeming better effects, was that there was no evidence proving that serum given intrathecally actually penetrated to the affected cells in marked concentration; that the nerve cells are known to be surrounded by a rich network of blood-vessels which might just as reasonably be believed to carry the serum to the cells as that the cerebrospinal fluid does so; and that the vascular circulation was the one most likely to accomplish this, since the current of the cerebrospinal fluid was commonly accepted to be in the opposite direction. Finally several observations were made on the blood and cerebrospinal fluid after intravenous injections of the toxin and showed that both were fairly rich in antitoxin for several days. The intravenous route was held to have the further advantages of permitting the giving of a maximal dose and of avoiding the ill effects sometimes following the intrathecal injection.

Treatment of Hyperthyroidism.—G. W. Gries (*American Journal of Röntgenology*, June, 1917) does not believe it advisable to hasten the Röntgen ray treatment of exophthalmic goitre. The massive dose method of treatment is especially dangerous in the acute type. The first improvement noted is in the nervousness and the pulse rate. This is followed by an increase in the weight and an improvement in the other symptoms. Formerly gas tubes were used; now the Coolidge tube is used. The mild cases of hyperthyroidism may be treated medically by the Röntgen rays. In acute exophthalmic goitre Röntgen treatment is the most satisfactory. In chronic exophthalmic goitre the choice lies equally between röntgenization and operation. The Röntgen treatment is slower, but there is not so much danger in producing a subsequent hyperthyroidism as by operation. The death rate from x ray treatment is nil. Where hyperthyroidism develops in an old goitre Röntgen treatment is only palliative. Here the danger of producing myxedema is also greater and the treatment should be surgical.

Prophylaxis of Anesthesia Acidosis.—William H. Morriss (*Journal A. M. A.*, May 12, 1917) reviews the mechanism by which the body is protected against changes in the hydrogen ion concentration of its blood and tissue fluids and cites the results of a series of clinical observations and animal experiments which showed that the administration of ether or chloroform to the stage of anesthesia was accompanied and followed by a reduction in the alkalinity of the blood through a reduction in the alkali reserve. While in no instance observed did this amount to a true acidosis, it nevertheless indicated the desirability of taking prophylactic measures for the prevention of possible acidosis. It was found that the preliminary administration of sodium bicarbonate to the extent of fifteen grams during the thirty-six hours preceding the anesthesia and following this by an equal amount in a like period of time would prevent the reduction of the alkali reserve. This plan was followed by entire elimination of the alkali reserve depletion, or its great relative diminution in patients, so that they recovered from their anesthesia with much less danger of the subsequent development of acidosis.

Treatment of Parotid Fistula. — Dieulafé (*Presse médicale*, April 26, 1917) asserts that in parenchymatous fistulas of the parotid gland the only effective means available to arrest the salivary secretion is to resect the auriculotemporal nerve, as advised by Leriche. Under local anesthesia an incision four centimetres long is made in front of the tragus, beginning a little above the ear and descending to the posterior border of the inferior maxilla, a little below the neck of the condyle. Beneath the skin in front of the tragus, the temporal artery is gently sought, behind it the vein, and finally, behind the vein, the nerve, which is then seized with forceps and cut. Its peripheral end is freed as far as possible and twisted until it ruptures. In eleven cases in which this procedure was carried out, three in normal tissue and eight in a cicatricial mass, the secretion was uniformly arrested. In two additional cases, cure of the fistula had to be completed by cauterization, which had previously failed.

Intravenous Injections of Colloidal Gold in Typhoid.—R. Massalongo and S. Vivaldi (*La Riforma medica*, April 21, 1917), after using this treatment in thirty-two cases, state that colloidal gold differs from the ordinary antipyretics in that its injection intravenously produces an initial sharp rise in temperature followed by an appreciable and prolonged lowering accompanied by a profuse sweating and polyuria. The patient's general condition improves promptly, especially in the nervous and cardiovascular systems. This agent given intravenously is demonstrated to be the most effective one yet used, attenuating the gravity of the disease and shortening its course; further, its administration even when often repeated is neither dangerous nor inconvenient. The action is physical and not chemical in reinforcing the system's powers of defense, attenuating the virulence of the pathogenic microorganisms, and facilitating the elimination of their toxins by abundant urination and perspiration. One c. c. was the dose used as a routine procedure and was repeated every two or three days until the fever was well under control.

Untoward Results of Typhoid Immunization. —William Lintz (*Journal A. M. A.*, May 5, 1917) reports a case of seeming severe anaphylactic shock occurring in a normal young adult after a single dose of antityphoid vaccine from the same bottle from which thirty-two others were inoculated without symptoms. Twenty minutes after the injection the patient began to feel weak and had a sensation of chilliness and a dull headache. These symptoms became worse until a violent chill came on one hour after the injection. Unbearable headache and continuous vomiting developed and the vomitus soon began to contain bright blood. There was extreme soreness all over the body, the joints became extremely painful, and these symptoms, together with the vomiting, lasted for forty-eight hours. The temperature rose to 103° F. and the patient became very apathetic. By the second day the spleen had become enlarged, the liver edge palpable, and the glands of the groin, axillæ, and neck enlarged and tender. Convalescence lasted a week and was much like that of an ordinary attack of typhoid fever. There had been but slight local reaction.

Cerebrospinal Meningitis.—W. E. Carnegie Dickson (*British Medical Journal*, April 7, 1917) reports the frequent post mortem finding of blocking of the foramen of Magendie by fibrinopurulent exudate or the blocking of the foramina in the region of the fourth ventricle and of the whole foramen magnum through swelling of the brain substances and its congestion. Both of these conditions are often associated with purulent inflammation in the cerebral ventricles while the spinal fluid may have become almost sterile. They are of great importance in the matter of treatment since it is obvious that lumbar puncture and the intraspinal injection of serum or other agents would not relieve the intracranial pressure or allow the therapeutical agent to reach the infected brain. Puncture and direct injection of the lateral ventricles may be tried with some hope of benefit. Post mortem experiments made by the author in cases of meningitis and in nonmeningeal cases showed that spinal intradural injections of from fifteen to thirty mils of methylene blue were followed by marked staining of the brain and the interior of the lateral ventricles, while this was largely or entirely absent in cases in which there was either of the types of blocking described. Clinical experiments with the lavage of the spinal canal with saline or the injection or eusol or of sodium citrate did not give encouraging results.

Infected Hemothorax—Gas Bacillus.—T. R. Elliott and Herbert Henry (*British Medical Journal*, April 7, 1917) conclude their report on this serious complication of traumatic hemothorax with remarks upon its treatment in which they emphasize the importance of early diagnosis and recognition of the probable type of disease. If the fluid is found to be sterile microscopically it is usually safe to watch developments, but if offensive or infected fluid is withdrawn surgical treatment should be instituted at once. The general plan of treatment should be to open the chest cavity at such a point as to secure complete drainage of its entire area; gently to break up and wash out all clots; to remove the foreign body, if one is present; and to provide for continuous drainage. Where the empyema is large and the toxic symptoms are not very marked it is advantageous to use air tight drainage. Where open drainage is employed the tube should be dispensed with as soon as possible, but a persisting offensive discharge requires daily lavage of the pleural cavity with some weak antiseptic such as eusol, or a mixture of phenol and peroxide of hydrogen. The acute pneumothorax type of patient is unable to stand much surgical interference and it is enough at first to insert a tube in an intercostal space under local anesthesia, reserving more extensive procedures until later. Acute septic types offer very little hope of being saved, but rib resection may occasionally succeed. In the gradual pneumothorax type preliminary aspirations to expand the lung may be performed with later operation and air tight drainage. The development of jaundice in any case demands immediate resection and drainage, and the same is true of the progressive toxic type. The prognosis under efficient treatment is very good in the absence of complicating abdominal wounds or severe mixed infection.

Treatment with Iodine.—Douglas H. Stewart (*American Medicine,* May, 1917) advises the following iodine preparations:

Calomel, ...gr. i;
Sodium chloride, ...gr. ii;
Iodine crystals, ...gr. iii;
A few drops of ether.
Liquid paraffin, ...gr. 1500.

This mixture is applied to wounds. For internal administration, especially when Streptococcus viridans is demonstrable in the blood:

Tincture iodi, ...5ss;
Fowler's solution, ...5i;
Aquæ, q. s. ad, ...5iv.
Filter. One dram after meals, well diluted.

For burns:

Calomel, ...gr. i;
Sodium chloride, ...gr. ii;
Iodine crystals, ...gr. iii;
Carron oil, q. s. ad, ...5viii.

Treatment of Bronchial Asthma by Vaccination.—Montgomery H. Sicard (*American Journal of the Medical Sciences,* June, 1917) reports sixteen cases treated with an autogenous vaccine obtained from bacteria cultivated from the sputum. The bacteria were primarily Streptococcus viridans or Streptococcus hæmolyticus and secondarily Micrococcus catarrhalis. The vaccine is best given twice a week in constantly increasing strength for twelve to twenty injections, and it is better to give such doses that local reaction occurs. His initial dose is 100 millions in adults; then he proceeds cautiously until a local reaction sets in. Of the sixteen patients twelve were cured, three improved, and one tuberculous patient was unimproved. In some cases the asthma cleared up after the first or second injection, others progressively improved from the time the vaccines were started, two did well but had occasional short relapses, and two were obstinate, requiring treatment for fifteen to seventeen weeks, but finally one was cured and the other improved.

The Treatment of Tetanus.—L. Sexton (*American Medicine,* May, 1917) states that the two main points in the treatment of this condition are elimination and nerve sedatives. The bowels should be moved twice daily. If the patient can swallow, from 2.5 to five grains of calomel and soda should be given, followed by high enemas. If the patient cannot swallow, suppositories should be used, followed by high enemas. The kidneys should be looked after by having the patient drink large quantities of water if he is able to swallow. If not, hypodermoclyses and enteroclyses should be given. To feed the patient it may be necessary to give nutrient enemas. In the treatment of the wounds proper, the prevention of tetanus by proper disinfection and immunizing doses of serum are far better and safer than the treatment of the disease after it has developed. Lacerated and punctured wounds should be enlarged and washed out with a fifty per cent. solution of peroxide. Equal parts of tincture of iodine and alcohol may be used. It is not sufficient to give a single dose of antitoxin. The dose should be repeated in from seven to ten days. The irritability of the spinal cord should be controlled by large doses of sedatives, including ether and chloroform to control the spasm. Two thousand units should be injected between the wound and the spinal cord. Meltzer's method of injecting twenty minims of a twenty per cent. solution of magnesium sulphate has not reduced the mortality. Irons has used 5,000 units intraspinously and 10,000 to 20,000 intravenously. On the fourth day he again gives 10,000 units subcutaneously. Six grams of chloral every six hours until the spasms have relaxed have been given by a French surgeon. Thirty to sixty grains of chloretone in either oil or whiskey depresses the function of the spinal cord. The best way to quiet the overexcited cord is to inject 1,500 units intraspinously.

Treatment of Chronic Intestinal Indigestion in Children.—Robert K. Rewalt (*Pennsylvania Medical Journal,* May, 1917) in outlining the treatment of this condition maintains that it is of extreme importance to keep the child in bed if there is any elevation of temperature. The patient should remain in bed for three or four days after the temperature has reached normal, and should be allowed up gradually. A nap of two hours daily, proper food, and proper exercises are of great value. The diet should consist mainly of scraped beef, beef juice, and milk. If the child improves, orange juice may be added after two weeks. Then oatmeal or barley gruel may be added to the milk and later toast and stale bread may be allowed. These articles of food, to which a soft boiled egg, animal broths, and the white meat of chicken may be added later, should constitute the diet for six months. The stools should be closely watched. If there is much mucus intestinal irrigation is called for. Warm saline is the best irrigating fluid. For the constipation give calomel and phenolphthalein, 0.1 grain each, every half hour for ten doses. The best tonic is the tincture of nux vomica.

Nondiabetic Acidosis—with Special Reference to Postoperative Acidosis in Children.—Ira Frank (*Annals of Otology, Rhinology, and Laryngology,* December, 1916) states that occurrence of acetone in the urine of nondiabetics, without symptoms referable to such a condition, is very common, especially in children. An "acid diathesis" is an important predisposing factor and may lead to acetonuria in consequence of minor indiscretions in diet and systemic disturbances; during the course of mild infections, i. e., coryza, and in chronic inflammations as chronic tonsillitis. He has especially noted a possible correlation between the chronically inflamed tonsil and acetonuria. Anesthesia, however, is the most common etiological factor, and children under the age of twelve years never fail to show acetone in the urine during the first twenty-four hours after a general anesthesia. The symptoms vary, depending upon the severity of the condition. Disturbance of respiration and the circulation, drowsiness, sweetish odor to the breath, with nausea and vomiting and prostration in the extreme cases, should arouse suspicion and lead to an examination of the urine. The administration of glucose, supplemented by sodium bicarbonate, has resulted successfully. Acidosis may at least be lessened by a carbohydrate diet and shortening of the starvation period preceding the operation, the use of nitrous oxide or short ether anesthesia, and a postoperative carbohydrate diet.

Treatment of Enuresis.—P. Bonnier (*Presse médicale*, April 2, 1917) notes that the anxieties and nervous tension of military service at the front sometimes cause enuresis to reappear in men who had been afflicted with it in childhood. That the disturbance can easily be overcome by producing a direct impression on the nerve centre concerned through light cauterization of the nasal mucosa above the head of inferior turbinate is maintained on the basis of experience in thus treating sixty-two patients ranging in age from five to twenty-six years. Twenty-one patients were cured at once, being free of incontinence on the first night after treatment, without subsequent recurrence; seventeen were cured after a few treatments; nine were improved, and in the remaining fifteen the treatment was ineffectual.

Surgical Versus Tuberculin Treatment of Renal Tuberculosis.—Leo Buerger (*Medical Record*, May 5, 1917) considers that the untoward effects of tuberculin on the renal parenchyma have not been sufficiently emphasized. Several theories have been put forward to explain these ill effects as the diffusible toxin theory, the diverse toxin theory, and the bacillary theory, in the last of which the bacilli themselves and adherent toxins are supposed to be at fault. Tuberculin results with apparent cure are usually based upon clinical facts alone and are not usually supported by pathological findings. At the present time tuberculin therapy has been condemned by all the anatomical facts at our disposal; the rationale of its use is insufficiently supported by clinical observations; and true curative effects have not been demonstrated by experiments on animals. Its use therefore as a therapeutical agent in renal tuberculosis needs critical substantiation before it should replace the reliable and tried surgical methods.

Acidosis, with Special Reference to Children.—Fergus Hewat (*Practitioner*, May, 1917) says that when acetoacetic acid is detected in the urine two obvious indications for treatment arise: to stop the formation of the abnormal acids and to neutralize the acids already present. In children the condition may be met with in connection with some trivial illness, or with urgent symptoms. In an ordinary so called bilious attack a saline purge or vegetable laxative and an enema are given. An ordinary soap and water enema followed by a saline washout is perhaps the best method of relieving the large intestine. This is followed by a simple alkaline mixture and dextrose added to the diet, which may require to be albumin water or whey for twenty-four to thirty-six hours. Later oatmeal gruel is useful. In severe cases in which there is intractable vomiting the lower bowel must be unloaded and a glucose solution, five to ten per cent., slowly introduced by means of a long tube. Sodium bicarbonate may be dissolved in this. Warm water well sweetened with sodium bicarbonate in ten grain doses, is given by mouth. If this is vomited, repeat it frequently and apply hot fomentations to the abdomen. As soon as the vomiting abates give albumin water with dextrose. In the diet of infants Nestlé's milk has often been found successful, but its use must not be continued too long as it is deficient in antiscorbutic properties.

Oil of Chenopodium for Carriers of Entameba Histolytica.—Ernest Linwood Walker and William Emrich (*Journal A. M. A.*, May 19, 1917) report favorable results from the use of oil of chenopodium in a small series of carriers of Entameba histolytica. Of fourteen carriers thus treated, ten were apparently cured, six from a single course of treatment, one after two courses and three after three courses. The method of treatment was to give fifteen to thirty grams of magnesium sulphate at 6 a. m.; one mil of oil of chenopodium in capsule at 8 and 10 a. m and at noon; and at 2 p. m. to give thirty mils of castor oil containing about one mil of chloroform. Perhaps the most essential feature of the treatment was found to be the thorough cleaning out of the intestinal tract by the saline, for where this was not accomplished the administration of the chenopodium was followed by relapse. A second very important point was the administration of the chenopodium during the period when the intestinal contents were very fluid from the saline, that is, two hours after the purgative. No ill effects were noted from the treatment.

Sterilizing Therapy in Malaria by Intravenous Injection of Quinine in Saline Solution.—Fernand Barbary (*Bulletin de l'Académie de médecine*, May 1, 1917) states that he found, in an auxiliary hospital in Nice, France, in which 889 soldiers were treated for malaria, that the necessity of limiting the stay of the patients in the hospital to a period of two to four weeks seriously interfered with the results of oral quinine treatment. Subcutaneous injections of quinine were considered undesirable owing to the frequent necroses thus caused. The administration of quinine intravenously in the dose 0.5 gram of the basic hydrochloride dissolved, together with one gram of urethane, in 125 grams of normal saline solution, was thereupon undertaken, with excellent results. The injections were given every three days, beginning from the time of the first paroxysm. After four or five injections, the interval was lengthened to five days. The solution was kept in ampoules, each containing the entire 125 grams of sterilized solution. Distilled and filtered water and pure chemicals were alone used, for experience showed that without these precautions a rise in temperature might follow which would suggest therapeutical failure of the procedure. The injections were made in the customary manner into the forearm or elbow veins, under low pressure and for a duration of ten to fifteen minutes. The patient was kept recumbent for twenty or thirty minutes, to obviate the slight malaise otherwise occasionally experienced. Under these injections, even in the extremely serious cases with pernicious manifestations, a complete change in the condition of the patients took place. The temperature seemed to be fixed close to the normal by the procedure, where oral administration had previously failed to arrest the paroxysms. The anemia and even cachexia were rapidly improved. It is advised that the procedure be prophylactically carried out in all plasmodium carriers as they reach France, to obviate infection of Anopheles mosquitoes and consequent extension of the disease. Repeated injections should be given for two or three months.

(*Continued from page 1271.*)

SECTION IN OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY.

June 8, 1917.

Cholecystostomy Versus Cholecystectomy.—Dr. MILES F. PORTER, of Fort Wayne, Ind., said that anatomical, physiological, chemical, and clinical facts support the contention that the gallbladder in man was an important organ. Disease of the gallbladder itself was rarely the cause of the symptoms for which the so called gallbladder case consulted the surgeon. The reports from the various clinics on the curative value of cholecystectomy as compared with cholecystostomy were confusing and contradictory and in some instances led to conclusions that were not warranted. Failure to obtain a permanent cure in the majority of cases of gallstones was due to overlooked stones. The return of symptoms might be due to a reformation of stones. There was no evidence to support the contention that the removal of the gallbladder materially reduced the likelihood of the reformation of stones. The recurrence of symptoms after cholecystectomy was by no means uncommon. A stone in the common duct of an individual who retained his gallbladder was not so great a menace as a stone in the common duct of one who has been cholecystectomized. The important question to decide was not as between cholecystectomy and cholecystostomy but rather whether in a given case surgical treatment was called for at all and if so what surgical treatment best fitted the case in hand.

Dr. HOWARD LILIENTHAL, of New York, maintained that the operation performed should be such as would fit the disease condition present. There should be no preconceived notion as to the operation to be performed in any given case. For twelve years, however, he had been removing every gallbladder sufficiently diseased to require any operation, and he was satisfied with the operation of cholecystectomy. It was hopeless to be sure that all stones had been taken out upon simply opening the gallbladder for their removal. When, in the course of a gynecological operation, a shrunken, diseased gallbladder, full of stones, was found, it should be taken out and, if necessary, the operation for fibroids or other pelvic condition performed later on.

Dr. H. J. BOLDT, of New York, asked Doctor Lilienthal why he did not take out both the gallbladder and the fibroids at once.

Doctor LILIENTHAL replied that the gallbladder operation was dangerous and hysterectomy was not to be done at the same time. One should take away first of all the thing causing symptoms and threatening life.

Dr. J. H. CARSTENS, of Detroit, maintained that in any gallbladder case one was apt to find some gastric trouble, and urged examination of the gallbladder where gastric symptoms were complained of. He had had no recurrences in cases in which he had allowed the gallbladder to remain. If only a single mulberry stone was found, he closed the gallbladder and wound without drainage; such cases were usually free of infection. Where mucosa of the gallbladder was diseased or the organ gangrenous, he removed it, but these were exceptional cases. No gallbladder operation should be advocated at the expense of another.

Dr. D. C. STRONG, of San Bernardino, Cal., asserted that one should in these cases take into account cholecystitis as well as cholelithiasis. Pneumonia often preceded gallbladder disease. In long standing cases cholecystectomy was alone indicated, though in cases seen early enough one might talk about draining the gallbladder. He removed every gallbladder except when the symptoms were only of three months' standing; when he drained.

Dr. J. W. VAUGHAN, of Detroit, stated that after reading Doctor Judd's recent paper he had done fewer cholecystectomies than before. The succeeding dilatation of the common bile duct and increased flow of pancreatic juice and bile might do harm. Likewise, the increased action of the sphincter might favor retrograde infection. In brief, the operation should be adapted to the individual case.

Doctor PORTER, closing the discussion, stated that in a recent second operation after cholecystectomy he had found a handful of stones in the common duct. The gallbladder was an important organ in man and should not be removed without a good reason. A gallbladder already placed out of commission by disease should, of course, be removed.

Preparation of Anemic Patients for Operation.—Dr. STUART MCGUIRE, of Richmond, Va., divided anemic patients from the standpoint of surgery into three groups: 1, those who should be operated on promptly; 2, those who should receive treatment before operation, and, 3, those to whom operation should be denied. Only secondary anemias were to be considered here. The immediate operative dangers in these cases were anesthesia and shock and the subsequent dangers, low resistance to infection and decubitus. Operation should, if possible, be postponed in profound anemia, though even here, the condition present might be such as to demand immediate operation. The measures appropriate in improving the anemic condition before operation comprised: 1. Arrest of blood loss or destruction by physical rest; direct hemostasis, as by packing the uterus, ligation, cauterization, and blood serum; indirect hemostasis, through drugs, radiotherapy, coagulants, and transfusion. The drugs that might thus be useful included opium, ergot, thymol in hookworm infection,

quinine in malaria, and mercury, arsenic, and iodine in syphilis. The x rays, the Coolidge tube being employed, were often of service in uterine fibromas. The use of radium was more risky. Transfusion and blood serum were also factors in indirect hemostasis. 2. Reconstructive treatment, as by plenty of appetizing and nourishing food and fresh air; drugs such as iron, strychnine, and arsenic, and transfusion which was often a lifesaving measure. Any anemia could be benefited by transfusion, which was practically without danger. Direct, artery to vein transfusion was still the procedure of choice, though the newer indirect methods were also practical and had the advantage of showing the actual volume of blood transfused. The indirect methods should be employed only where they presented a distinct advantage over the direct, especially as regards the time consumed. In acute hemorrhage transfusion was, despite statements to the contrary, indicated, though it might increase the bleeding, which should be simultaneously attended to. In anemias due to malaria, syphilis, or parasites, transfusion was indicated only where the anemia was very severe or the measure necessary before operation.

Dr. Sidney A. Chalfant, of Pittsburgh, pointed out that there seemed to be a considerable individual variation in the extent of blood loss necessary to exclude the possibility of recovery. This might be due to differences in the normal ratio of the total blood weight to the body weight. In internal hemorrhage due to ruptured ectopic gestation, in which repeated blood counts had frequently been advised, attention should be paid to the fact that all cases of marked hemorrhage showed a drop in the erythrocyte count and hemoglobin in the first twenty-four hours. This was because the natural restoration of the blood volume took place at the expense of the fluids of the body, and one might be led into error if this factor were not taken into account. Of the blood transfusion procedures, the indirect was the more easily performed. Morphine was of great help not only in cerebral and intestinal hemorrhage but also in hemorrhage from the uterus and internal hemorrhage. In uterine hemorrhage it was even of greater assistance than ergot. Rest was of great benefit in the reconstructive process, especially if the patient's bed was placed out of doors.

Doctor Lilienthal stated that in some cases of anemia requiring operation much could be done by means of local anesthesia. Hemorrhage in the peritoneal cavity not being immediately followed by a clotting, it had been suggested to collect the fluid blood in the peritoneal cavity at once in a sterile manner and reinject it into a vein. Sixteen cases thus treated, with uniformly good results, had been reported from abroad, and the speaker favored trial of this procedure. Striking results were obtainable by bandaging the extremities, as advised by Loomis for hemoptysis already in the early eighties, or better, by the Dawbarn method of placing a band round the thigh before operations. The blood pressure was lowered thirty to sixty millimetres Hg by this procedure, thus reducing hemorrhage. It had brought about immediate cessation of the flow of blood in gastric and typhoid hemorrhages, and would probably be useful in gunshot wounds. The blood pressure immediately rose when the blood was let into the general circulation again. The band should be applied before anesthesia; when it was removed, the patient came quickly out of the anesthesia.

Surgical Treatment of Intestinal Stasis.—Dr. J. Shelton Horsley, of Richmond, Va., asserted that all cases of intestinal stasis, so called "abdominal neurasthenics," should first be carefully treated medically for a number of months, operation being resorted to only when this failed. In operating he either freed any bands found or did an ileosigmoidostomy or cecosigmoidostomy. Among the seventy-five patients on whom he had operated in the last five years forty-six per cent. had been greatly improved, 32.5 per cent. improved, twelve per cent. unimproved, 5.5 per cent. had died, and four per cent. had not been heard from. These figures justified continuance of the operative procedures for intestinal stasis. The Coffey operation was particularly valuable where stasis was due to ptosis. Ileosigmoidostomy was unwise, and he had discarded it.

When Is Cancer Operable?—Dr. J. Walter Vaughan, of Detroit, pointed out that the literature of cancer abounded with isolated observations which, while not so far of much value as regards ultimate cure of this disease, helped appreciably in affording exact indications for operative treatment. Thirty thousand differential blood counts made under his supervision had shown that a marked increase in the number of mononuclear cells in the blood occurred upon the injection of vaccines containing cancer proteins. Upon subcutaneous injection of the proteins the increase was slight—17.5 to twenty-six per cent.; upon intravenous injection it was greater, and upon intraperitoneal injection, still greater—sixteen to forty-six per cent. The irregular mononuclear cell with frayed margins was very characteristic of malignancy and, when present, led him to suspect the disease. The sensitizing dose of cancer proteins should not be too large. The increase in mononuclears lasted only four to twenty-four hours, and during this period only, the animal was sensitized to the proteins. The effects of various normal and abnormal tissues on the mononuclears was investigated. The more embryonic in type was the tumor from which the protein injected had been obtained, the greater the resulting increase in the mononuclears. The residue from normal placental tissue was, however, the most effective injection material of all, and was at present generally used in test injections. Research showed that the immune ferment is found in the large mononuclear cell. Examinations of the blood in 200 cases had shown that early malignancy generally resulted in a decrease in the number of polymorphonuclear cells and an increase in the mononuclears. This condition of the blood resembled that of exophthalmic goitre and syphilis. After metastasis, the polymorphonuclears rose to seventy per cent., or even higher. Where a high mononuclear count existed for several days, the tumor regressed during that period; where a high polynuclear

counted persisted, on the other hand, the tumor progressed. Marked metastasis did not occur until the polynuclear count was high, i. e., until the immune mechanism had broken down. Before this time, the case was operable, but after the polynuclear count had become high and remained so, operative treatment could not be safely attempted. Whether, in a case where the first count showed a high percentage of polynuclears, the system was still capable of reacting against the tumor was ascertained by injecting about one c. c. of placental residue intraperitoneally into the patient and a differential count then made daily. If the polynuclears decreased after twenty-four to forty-eight hours, the previous high count must have been due to increased tumor growth, and metastasis not occurred, such a case being, therefore, operable. On the other hand the test might show that an operation would actually do harm. In two cases of gastric cancer clinically alike, the test had shown that operation was indicated in one instance and in the other it was not. The treatment had been regulated accordingly and subsequent developments had shown the value of the procedure. An operation was best performed when the mononuclear count was high. Where the test revealed complete loss of the immunizing mechanism, prompt progress of the tumor, even though it was small at the time, was to be expected. Some cases in which the immunizing mechanism showed alternate ups and downs afforded a basis for claims of cure of cancer on the part of charlatans.

Dr. Henry Schmitz, of Chicago, had noticed that a persistent leucopenia in cancer implied an unfavorable prognosis.

Dr. Clarence G. Bandler, of New York, said that he was gratified to hear the word immunity introduced in connection with carcinoma. Immunity would probably be eventually found the main factor regulating the growth of such tumors. It would be interesting to investigate the behavior of the spleen in this direction, and likewise, the question whether lack of resistance in an entire family might not take the form of a subjection of the members of it to carcinoma. The speaker requested Doctor Vaughan to state what his findings had been in regard to benign tumors. Chorioepithelioma, he thought, denoted a lack of protection against tumors, whether due to a disturbance of the thyroid, hypophysis, spleen, or some other organ.

Doctor Vaughan, in closing the discussion, replied that in testing out vaccines made from benign tumors the rise in the mononuclears—six to ten per cent.—had not been found anything like as pronounced as from malignant tissue. The reversion of the cells of the latter to the embryonic type was the important factor which influenced the blood cells. Repeated differential blood counts were much more important than determinations of the blood pressure, temperature, and pulse in tracing out the progress of disease processes in general.

The End Results of the Treatment of Inoperable Uterine Cancer by Heat.—Dr. James F. Percy, of Galesburg, Ill., described his method of treatment as applied in cases of uterine cancer diagnosed as inoperable and in which the mortality would otherwise have been 100 per cent. The heat was so applied from within that the uterus began to feel warm externally to the rubber gloved hand in about twenty minutes. The malignancy was destroyed by the slow heat, which, however, did not injure the surrounding tissues. Fifty-two cases had been added to their thirteen original cases thus treated. Of the thirteen, two women were at present living and well; one of these had been an advanced vegetative case. Of the new series of fifty-two cases, ten women had at present been free of cancer for eight months or longer. In applying the treatment the heating apparatus must be passed completely to the fundus of the uterus. The primary operative mortality of the procedure was not over one per cent. Of advanced, inoperable cases ninety-five per cent. could be treated by heat, with very little danger. Reports of 200 or more additional cases that had been treated by the method by various surgeons were at hand, but had not yet been worked up. Even if only palliative, the procedure was well worth while in that it arrested unpleasant symptoms, such as the offensive discharge, gave greater physical comfort, and improved the mental attitude of the patient. Surgical treatment, furthermore, still exposed to autotransmission of the tumor and excited the latter to renewed growth; heat should therefore precede the use of the knife.

Dr. J. Herman J. Boldt, of New York, asserted that, while only a palliative surgical intervention, a proper application of heat was one of the reliable remedies in uterine cancer, especially if combined with celiotomy and tying off of iliac vessels. He had, however, never seen fistulas resulting from the procedure close, nor had he known of a mortality as low as one per cent. The important features of the Percy method were the low heat used and the opening of the abdomen. Neither low nor high heat destroyed the cancer cells more than a few millimetres from the site of application. High heat was preferable because it saved time. Further study was required to settle the question as to which is the better, high heat or radium.

Dr. F. Walcott Bancroft, of New York, stated that he had had occasion to perform an autopsy thirty-six hours after application of the Percy method. This patient had become toxic in eighteen hours after the treatment. The heart had shown an acute myocarditis, and the uterus a thin eschar, beneath which various cocci and bacilli had been found. Beyond the zone of leucocytic infiltration, there had been found areas of intact cancer cells, with the surrounding muscle cells destroyed, while in other portions there were destroyed cancer cells, with intact muscle cells. Apparently the muscle cells had been, as a rule, more injured than the cancer cells. Edema of the tissues had also been noted.

Doctor Leonard, of New York, referred to a patient who had died of violent acute toxemia on the fifth day after a Percy treatment. The pathology in this case had been precisely similar to that of a severe superficial burn. Cancer tissue had been found one centimetre from the treated surface. Another patient had died on the seventeenth day after a Percy treatment from streptococcic septicemia. Experiments had been performed to ascer-

tain directly the effects of the Percy procedure on freshly excised living uteri. In a first series a cherry heat had been applied; in a second, the Percy low heat. A fluid colored with eosin had then been injected, and the specimens fixed in formalin and examined in sections. The experiments had been planned so that the fluid injected would not enter areas that had been coagulated by the heat applied. The pale zone of coagulation had been found to extend at most fourteen millimetres from the surface to which the instrument had been applied. To determine whether carcinomatous uteri might not be better coagulated than the normal organ, malignant uteri obtained by performance of the Wertheim operation had been similarly tested. Where the uteri had been subjected to the Percy low heat for two hours the zone of coagulation had been at its thickest fifteen millimetres. With high heat, exactly the same result had been produced in two or three minutes.

Dr. George B. Ward, of New York, stated that his clinical results had been very similar to those of Doctor Percy. One patient was at present still alive two years after the treatment. The others were dead, though they had been benefited by a period of six months to a year. Objections to the low heat method were: 1, toxic effects occurring a few hours after the treatment; 2, great frequency of resulting inaccessible vesicovaginal fistulas. The results were just as good with high heat, with perhaps less danger of toxic action and a great saving of time. Twelve years ago he had applied high heat to a recurring growth, and there had been no further return.

Dr. J. Shelton Horsley, of Richmond, Va., pointed out that a slow, simmering heat in cooking a beefsteak penetrated more than high heat. The difference was due to circulation of fluid in the tissues. The tying of the vessels was an unsatisfactory procedure. In using the method, the speaker used rubber covered clamps to convert the uterus practically into dead tissue. The time required for the procedure was also cut down thereby. A few cases cured by injections of a vaccine of attenuated cancer cells were referred to.

Dr. H. C. Bayley, of New York, stated that in twenty-six cases he had applied the Percy method and followed it with radium. Of these cases four women had remained free of cancer. In a larger series of inoperable cases radium had been used alone. Again, about fifteen per cent. of the patients had remained free of cancer. Apparently, radium alone did as much as the Percy procedure, except where there existed a cauliflower mass in the vagina, which should be burned away before the use of radium. Many fistulas resulted, which never healed spontaneously.

Doctor Percy, in closing the discussion, asserted that, despite what had been said, experience had shown that high heat was not as useful as low. One could not cook a steak through by throwing it on the fire. How did Doctor Leonard know that the cancer cells he had seen in his sections were viable? The fistulas sometimes resulting from application of heat would heal up if the opening had been made through the uterus. In repairing the conditions, the procedure should be such as would convert the upper part of the vagina into the lower part of the bladder, thus avoiding disturbance of the ureters and ascending infection.

The Present Status of Radium Therapy in Diseases of Women.—Dr. Henry Schmitz, of Chicago, asserted that the use of radium must be preceded by a diagnostic curettage. Where uterine cancer was known to be confined to the uterus, an operation should by all means be performed. In inoperable cancer of the uterus and cervix, however, radium was the best agent, and it was also very valuable as a prophylactic against recurrence after operations for cancer. In benign conditions of the uterus accompanied by hemorrhages, including myomata and inflammatory and other metropathies, ninety-three per cent. of cures were obtainable with radium. Radium therapy was still, however, in its infancy. The radium rays were dangerous to use, and their employment must be preceded by thorough study.

Prolapsus Uteri and Its Treatment. — Dr. Abraham J. Rongy, of New York, maintained that the size of the child and the character of the labor did not correspond to the results as regards uterine prolapse. The factors underlying the latter were, indeed, not as yet definitely known. Among them undoubtedly were a faulty anatomy of the bony pelvic outlet, and a general insufficiency of the musculature, especially that of the pelvic floor. Many unmarried women, as well as young girls, had uterine prolapse. Much could be done by carefully watching the development of the young girl and preparing her for motherhood. Where, having borne three or four children, a woman with prolapse cared little for additional offspring, the interposition operation was indicated, and no other surgical procedure would do the work satisfactorily. The intraabdominal pressure had but little influence on prolapse except where the latter had already started.

Dr. Harvey P. Jack, of Cornell, N. Y., protested strongly against performance of the interposition operation for prolapse. Personally, he amputated the cervix, shortened the round ligaments, and gave the subject a chance to become a mother.

Doctor Rongy, in closing the discussion, stated that to subjects who had not yet been mothers he gave instructions to come back for the operation to relieve their prolapse after they were through bearing children. The majority of these patients were satisfied with one or two children and were then prepared for the operation.

SECTION IN PREVENTIVE MEDICINE AND PUBLIC HEALTH.

June 7, 1917.

In the absence of Major General Leonard Wood, detained in the South on service, the chairman introduced Colonel T. H. Goodwin, who was for eighteen months senior medical officer on the Allies' western front. Colonel Goodwin stated that Great Britain began the war unprepared and was obliged to form armies of millions to take the place of the first expeditionary force, which was wiped out. Public health was of most importance in war. The army was not a good fighting machine unless in good

health. It became the duty of medical men in England who had little training in public health work to undertake this new and vast work of training millions of troops. At the present time, they were looking after a million hospital beds. They needed medical men very, very badly, and asked our help. It was true that the losses of medical men on the firing line had been very considerable. It had been argued that medical men should be conserved, but they could not save their doctors. If we pictured the front of a small battle with twenty to thirty thousand wounded to care for within a danger zone five miles deep, the only way to care for the wounded was to get the medical personnel up. The wounded must be attended for the sake of the effect of their presence on the morale of the fighting men even though medical men were killed. Already, six base units had gone from here to England, besides twenty orthopedic surgeons working to restore cripples at Liverpool, in all 250 American doctors, 400 nurses, and 800 enlisted men had already gone over. The British War Office had extended its thanks to America. They hoped to see sent from here every month 200 doctors and 200 nurses. In France they had a hospital of 800 beds, which somehow always had 1,100 cases. Fifty thousand cases passed through their hands in eighteen months. They were supposed to have twenty-seven medical officers, but they never had more than twenty-two; frequently they had but thirteen or fourteen. The doctors were operating day and night continuously for days and weeks. They had been working their very souls and bodies out; they could not go on forever. The first duty was to realize the situation; then would come the determination to carry the business through no matter what the cost.

Medical Student as a Medicomilitary Cadet.—Dr. H. C. Coe, of New York, opposed interruption of the medical education of fourth year medical students. It was much better for medical students to be given the elements of medical military training while still in school, rather than for them to leave the medical school for service in the medical reserve corps. He proposed a plan for military training in medical schools involving camp experience for a month during the summer of the third and fourth years respectively.

Dr. Francis E. Fronczak, of Buffalo, emphasized the fact that no medical undergraduates should be accepted as members of a medical corps, but should proceed to graduation as physicians. Medical undergraduates did not make good members for a medical reserve corps, as they often broke discipline, and owing to partial medical training used excessive zeal in taking on responsibility.

Preparations for Public Health during War.—Dr. Franklin H. Martin, of Chicago, medical member of the Council for National Defense, laid stress upon the importance of having an ample Medical Officers' Reserve Corps for the division of public health. The paramount issue at the present time was the obtaining of members for this reserve corps.

Dr. W. C. Rucker, of Washington, said that the plan was to enlist in the Medical Officers' Reserve Corps all those who could assist in the protection of public health. In war, the infections of peace could not be tolerated. He stated that the object of Senate Joint Resolution 63, introduced by Senator Ransdell, of Louisiana, and approved, was to render camp zones sanitary and care for the health of munition workers.

The following resolution, offered by Dr. W. S. Rankin, was adopted:

Whereas, The protection of the national health is a matter of paramount importance, particularly at the present time, and

Whereas, To accomplish this it is necessary that there be a close integration of all the health agencies of the nation, the States, and the municipalities, therefore,

Be it resolved, That the Section in Preventive Medicine and Public Health urge the House of Delegates to memorialize Congress to the end that the Senate Joint Resolution 63 be speedily enacted into a law.

Preservation of the Health of the War Worker.—Dr. W. Irving Clark, Jr., of Worcester, Mass., said that the importance of health in relation to production had only been recognized during the last five years. Employers throughout the country were now giving it considerable attention and the British Ministry of Munitions had called attention to the importance of the health of the worker in a series of bulletins. The control of the health of the worker while he was in the factory was definitely in the hands of the employer and by simple logical measures much might be done to reduce the prevalence of accidents, disability from accidents when they occurred, and particularly the amount of lost time from accidents and sickness. The employee should not only be guarded against the external dangers of poor ventilation, fatigue, poor light, and accidents, but should be under constant medical supervision. This supervision provided a physical examination and subsequent advice as to the best method of remedying any defects found at the examination, besides seeing that the employee was placed in a department where any physical defect he might suffer from would not militate against his health and efficiency. Besides this medical supervision he must be provided adequate care for all accidents occurring in the factory, subsequent treatment, and diagnosis and advice in all cases of sickness. Most factories carrying on this work had devised systems of organization which were similar. A good form of organization was that of close touch between the employment department, the health department, and the safety engineering department, the health department being in the charge of a physician who had an assistant physician and nurses working for him. The department in a small factory might be run with a single dispensary; but in larger plants it would be necessary to have numerous subdispensaries or first aid stations. It was possible to work out a uniform system which could be used by any factory taking up war work. In this way the health of the worker would be efficiently guarded.

Dr. G. W. Schereschewsky, of Pittsburgh, said that in a time when greatly increased production was needed, when women were entering industry in large numbers, and when men should be preparing to perform the maximum of work, it was necessary

to see that minimum standards of industrial hygiene were established in all work places and that systems of medical supervision should be provided to detect early evidence of breaking down. Even defective persons should be utilized according to capacity.

Dr. David L. Edsall, of Boston, advised consulting the reports of the British Commission to inquire into the health of munition workers. It was evident that the industrial physician was here to stay and would increase rapidly in numbers unless the general practitioner became much more familiar than he now is with industrial needs. The profession needed greater knowledge of the technical aspect of industrial requirements.

Dr. R. W. Corwin, of Pueblo, Col., felt that it was essential to prepare the man for his work and conserve the family. Health implied better work, and that meant much for the public.

Dr. John R. Williams, of Rochester, N. Y., advocated the use of the Colin dynamometer as a means of measuring the physical vigor of the worker. Dissipation of energy, fatigue, and malnutrition were registered accurately in this way.

Some Aspects of the Public Health in China.—D. W. W. Peter, of Shanghai, China, stated that the problem of disease prevention in China was complicated by the extreme degree of illiteracy of the population. The main burdens in China were smallpox, cholera, the plague, and an unusual amount of blindness; malaria was prevalent, especially in South and East China. Pollution of water and soil was general. Public comfort stations were found next to food shops. There was no segregation of lepers. Home sanitation was entirely unknown. Although the opium trade had been abolished, the morphine habit had taken its place and eleven tons of morphine sulphate had been imported into China in 1915. Tuberculosis was another prevalent disease. The Chinese medical association now numbered 100 members and the China Medical Missionary Association numbered 600 members. The China Y. M. C. A. was growing rapidly. A China public health education committee had been formed, the Commissioner of Education and Commissioner of Police having become active members. This association was extending its work rapidly.

Dr. Haven Emerson, of New York, called attention to the fact that the army was ready to absorb the entire product of the medical schools for the next eight years. Nevertheless, fewer physicians were being graduated than five years ago. There was great need for training people to do extension in public health education, and that this need existed in the United States as well as in China. Such persons need not, however, be graduates of medical schools.

Dr. N. W. Brown, of Nankin, China, said that there were 400 foreign physicians in China, or one to every million in the population. No real health education was possible, except through coordination of activities as conceived by Doctor Peter, whose first public health exhibit had been a revelation of possibilities. China would respond most heartily to efforts in the direction of public health education and conservation. There was danger to America from contagious diseases by transshipment.

Community Health and Tuberculosis Demonstration.—Dr. D. P. Armstrong, of Framingham, Mass., described the experiment now being made at Framingham under the auspices of the National Tuberculosis Association, under an appropriation of $100,000 by the Metropolitan Life Insurance Company. This experiment was an endeavor to find all persons with incipient and advanced tuberculosis in a normal community and place them under medical control, to throw light on the industrial and social causative factors, and to devise a mechanism to eliminate the disease.

Dr. S. Adolphus Knopf, of New York, regarded this as a unique experiment in public health, of the utmost importance to advances in the knowledge of the etiology and prevention of tuberculosis.

Prophylactic Therapy of Rickets in a Negro Community.—Dr. A. F. Hess, of New York, said that for the past six months an experiment was carried out in a colored district of New York, where the infant mortality was two or three times greater than that prevailing in the city at large. As is well known, rickets was exceedingly prevalent. It might be said to be present in a greater or less degree in almost all negro babies, involving many who were breast fed. In contrast to this, little rickets was found in the West Indies, Cuba, the Bahamas, Panama, and the Barbados, due to the fact that the diet was mainly of fruit and vegetables. He had found that in the north meat or fish or eggs were used daily and that foods were often cooked in the form of stews. He had given Norwegian codliver oil in many cases with great advantage. In thirty-two cases in which fifty-four ounces of oil was given in six months ninety-four per cent. were free; in five cases in which twenty-three ounces of oil was given in six months eighty per cent. were free, and in nineteen cases in which no oil was given only sixteen per cent. were free. Codliver oil could be dispensed at milk or infant welfare stations. The object of this study was to see whether rickets could be presented among these babies by giving codliver oil during the first few months of life. This object was achieved. In connection with this work, a rickets clinic was established in this district and it was recommended that a clinic of this kind be conducted not only in this quarter, but in other sections where rickets was particularly prevalent. Codliver oil might well be distributed at the milk stations. With tuberculosis clinics and cardiac clinics in operation it was only logical to institute rickets clinics to suit the special needs of certain neighborhoods.

Dr. J. Sobel, of New York, called attention to the fact that infant mortality among negroes was 110 per cent. higher than among whites. Inasmuch as the statistics show a low fat intake, this could be offset by providing more milk.

The Place of Infant Welfare in Public Health Instruction.—Dr. J. H. Mason Knox, Jr., of Baltimore, Md., said that the State boards of health have been greatly impeded in the exercise of their important functions by the domination of politics and by the lack of trained and experienced hygienists in this country. Medical schools were beginning to appreciate the necessity of introducing

courses in public health into their curricula. Instruction in infant welfare work in any properly considered and thorough course in public hygiene is of great importance. It was pointed out that eighteen per cent. of the mortality of all ages occurred under one year, and that the unnecessary loss of infant life entailed a tremendous expenditure of both money and vitality. Infant welfare could be divided into two main divisions: one having to do with having better babies born; the second division including a study of the causes of illness and death during the first year of life. An outline of a course on infant welfare which would form a part of a systematic presentation of the subject of hygiene, was suggested. It is felt that no student should be given his degree and take up public health work, without knowing the value of infant life and something also of measures best adapted to foster it. At this time of stress and danger, when the youth of the land were about to offer themselves for the service of their country, and many of them might be called upon for that last measure of devotion, it was especially timely that all efforts tending to improve the health of the people should be fostered; and particularly was it vital that the infant population, upon which in due time the future of our nation must depend, be carefully enumerated and conserved.

SECTION IN OPHTHALMOLOGY.

June 6, 1917.

The Anaphylactic Basis of Sympathetic Ophthalmia.—Dr. Alan C. Woods, of Philadelphia, said that the mycotic and cytotoxic theories of sympathetic ophthalmia did not adequately explain the etiology of the disease. The anaphylactic theory of sympathetic ophthalmia overcame the chief objections to the other theories. This theory assumed sympathetic ophthalmia to be an anaphylactic uveitis brought about in the following manner: The diseased uvea in the exciting eye broke down and was absorbed by the organism, thus producing a hypersensitiveness, especially of the sympathizing eye. An interaction between the antibodies in the exciting eye and the absorbed uveal tissue now took place. This interaction was manifested clinically as a sympathetic ophthalmia. This theory assumed several fundamental points not established. An extended study of the scientific facts assumed by this theory has been made and the following points demonstrated:

By means of the complement fixation reaction on the serums of dogs immunized to foreign and homologous uveal tissue and uveal pigment, it was determined that: 1. Uveal tissue could act as antigen in animals of the same species and that the pigment was the constituent responsible for this property. 2. In its immunological reactions pigment was organ specific and not species specific. These findings confirm the earlier work of Elschnig. 3. It was shown that when the eyes of a dog sensitized to a given protein were perfused with normal defibrinated blood containing this protein, the eyes reacted with a marked contraction of the pupil and with hemorrhages in the fundi. Using this reaction as a method, the immunological reactions of uveal tissue were again determined and points 1 and 2 again confirmed. 4. It was further shown that uveal tissue injected in one eye could cause a hypersensitiveness of the second eye, and when this second eye was later perfused with normal defibrinated blood to which uveal tissue was added, anaphylactic phenomena resulted. 5. Through sensitization by intracellular injection of uveal tissue in one eye and intoxication by intraperitoneal injection, sympathetic ophthalmia was produced experimentally in one instance. The clinical history and pathological studies of this experimental case were given. The speaker believed these findings constituted a scientific basis for the theory.

In discussing this paper Dr. G. E. de Schweinitz spoke of the other theories advanced to account for the occurrence of sympathetic ophthalmia and described Elschnig's theory. The clinical objections to this theory were that anaphylactic manifestations were usually active, and so differed from the usual course of sympathetic ophthalmia. It was hard to reconcile the theory with the benefit derived from preventive enucleation. Sympathetic ophthalmia happened almost wholly after penetrating wounds, especially of the danger zone. It was more frequent in children and robust persons than in those who have somatic anomalies. It was difficult by this theory to explain isolated areas of attack. At the same time this theory furnished a better explanation of the clinical interval between the injury and the onset of sympathetic trouble. The final proof of the correctness of the theory was not at hand.

Doctor Verhoeff did not think convincing proof of the theory had been furnished. He found it hard to see why the choroid did not react.

Doctor Schoenberg called attention to the reported scarcity of sympathetic ophthalmia in the present war. He has experimented along similar lines to those followed by Doctor Woods and did not get the same results in dogs that he did in rabbits, so he did not think the effects in man could be deduced from those obtained in dogs.

In closing Doctor Woods replied to some of the objections. A few cases of anaphylaxis ran chronic courses, and he thought the lack of active character the chief clinical objection. As regards preventive enucleation, about as good a case could be made out from it on one side as on the other. From eighty-six to a hundrd per cent. of the cases were of traumatic origin, but this part of the subject, as regards anaphylaxis, had not yet been worked out. Young people were more susceptible than older ones to anaphylaxis.

Oxycephaly.—In this paper, by Dr. Arthur J. Bedell, of Albany, attention was drawn to the literature of the subject, the few cases reported in America, and the fact that only eight operations have been cited. Emphasis was laid upon the three important symptoms: exophthalmos, impairment of vision, and cranial deformity, which tend to make the diagnosis comparatively easy. Histories of three cases were presented with photographs, x ray findings, and colored fundus drawings. The patients were members of the same family, a girl eleven years of age with practically normal vision

and very slight fundus change; her brother, eight years old, with marked alteration of the shape of the head and bilateral optic neuritis; a younger sister showing even greater change in the head and bilateral optic atrophy. The boy was operated upon and finally came to autopsy, when it was found that the optic foramina were not narrowed by either bony growths or connective tissue bands. The speaker believed that oxycephaly should be diagnosed more often and surgical measures more frequently instituted.

The Endonasal Operation on the Lacrymal Sac.—Dr. W. B. CHAMBERLIN, of Cleveland, said that the tear sac was common to the field of ophthalmologist and rhinologist and that more successful results for the patient may come from mutual help and cooperation. Up to 1890, according to West, treatment of dacryostenosis had made no real progress for twenty-five years. West reported seven operations on the duct in 1910. In 1913 he had reported the investigation of 300 cases, through the generosity of Professor Silex, of Berlin, with operations on 130 and successful outcome in over ninety per cent. He had operated on every possible sort of disease affecting the lacrymal apparatus. This operation, as developed by West, had the following advantages: 1. A natural pathway for tears was restored. 2. Cure by probing was unnecessary. 3. The lacrymal gland was spared. 4. The possibility of a scar was avoided. The tendency of the passage in the middle meatus to close led to Yankauer's operation. In 1912 he had reported nine cases, with seven abscesses cured and epiphora in only one. Tears passed into inferior meatus. Mosher devised his operation while developing his operation on the ethmoid labyrinth and the frontal sinus. He had reported having tried it abundantly on the cadaver and three times on the living, and that it was too soon to say much about results on the living. Doctor Chamberlain then presented his cases and his modification of West's instruments.

Dr. H. P. MOSHER, of Boston, described his own operation, which differed from West's. The danger of a reclosure of the canal must be appreciated, but the operation seemed more efficient than extirpation of the sac. He advocated the use of a silver style to be worn several weeks to do away with the necessity otherwise present of subsequent probing.

June 7, 1917.

Conical Cornea or Anterior Myopia.—Dr. EDWARD JACKSON, of Denver, concluded from a study of forty-five cases, which had been under observation for varying periods up to fourteen years, that this condition was the result of some impairment of the general nutrition which weakened the cornea to such an extent that it yielded before the intraocular pressure. The patients were apt to press upon the lids to improve the vision, but such pressure was dangerous to the eye. The myopia should be corrected with the glasses which gave the best vision which could not be improved by pressure. The eyes should not be bandaged, as this tended to soften the cornea, but the constant use of pilocarpine was advisable.

Dr. S. D. RISLEY, of Philadelphia, called attention particularly to the changes in Descemet's membrane to be expected in addition to those in the uvea, the thinning of the anterior sclera, and the engorgement of the anterior ciliary vessels. He believed that the impaired nutrition of the cornea explained both the changed curvature and the changes of the meridians.

A New Operative Method for the Relief of Advanced Cases of Keratoconus.—Dr. MEYER WIENER, of St. Louis, illustrated by diagrams the details of his operation. He excised an elliptical section of the cornea near the periphery as deeply as possible without perforating Descemet's membrane, and brought the edges together with sutures passed through two gold plates to prevent them from cutting out. He claimed excellent results and said that only a linear scar was left by the procedure.

Dr. EDWARD C. ELLETT, of Memphis, Tenn., had no experience with this operation except experimentally on enucleated eyes. During these experiments he found that excellent illumination was a necessity, that his vision needed to be aided by a binocular loupe, and that a small perfect scalpel was the best knife. The cuts must approximate the same depth in the cornea. The removal of the included portion was easy. He preferred a single suture, each plate having two holes, to the two or three sutures advocated by Doctor Wiener, because it was sufficient to approximate the edges of the wound, and more sutures in the very limited space were apt to get tangled. It was as easy to introduce a suture in the cornea as in the sclera.

Doctor WILDER said that a lack of general nutrition did not seem to him to explain all of the phenomena in these cases; there must be some anatomical peculiarity in the cornea because of the changes that took place in the nerve endings and elsewhere. Sometimes the reflection of the wires of the ophthalmometer can be seen to wave. He had used with good results three or four cauterization cuts on opposite sides of the cornea nearly to the limbus through Bowman's membrane.

Doctor TURNER believed that the paramount condition in the production of keratoconus was accessory sinus disease. This lowered the nutrition of surrounding parts, and turgescence of the nasal mucous membrane was associated with turgescence of the conjunctiva and apt to be associated with changes in the dioptric apparatus.

Doctor FOX preferred the cautery, though the suture was not as detrimental as it appeared to be.

Doctor THOMSON thought the results of Wiener's operation better than those obtained by the cautery.

Doctor JACKSON said that the clouding of the cornea in these cases might be temporary. The condition was not very apt to run in families. Sometimes the vision pulsated. He had found infection of the sinuses present in some cases.

Hereditary Syphilis in Patients with Interstitial Keratitis.—In the absence of Dr. ABNER POST, of Boston, this paper was read by title.

Interstitial Keratitis, with Special Reference to the End Result.—As Dr. GEORGE S. DERBY, of Boston, was absent on military duty, this paper was read in abstract. It contained the results of an examination of ninety-six cases of this disease two or more years after the last attack.

Dr. Arnold Knapp considered that a very important point in these examinations was that they had been conducted under a mydriatic. The results in this disease were proportionate to the severity of the attacks. Salvarsan and mercury were of great value in treatment in improving the general condition of the patient. Radium was of doubtful value. An onset of increased tension indicated a change of treatment locally, and an iridectomy was likely to give good results.

Dr. John A. Fordyce said that this disease illustrated the persistence of the infective agent in one location. Some patients presented interstitial keratitis as the only symptom of hereditary syphilis, while others presented other symptoms as well. Positive eye symptoms might be present with a negative Wassermann, and the reaction was apt to be absent in the cerebrospinal fluid. The reaction might be made negative by long continued treatment, and the blood could be reinfected from the eye.

Dr. F. Park Lewis obtained good results in clearing up the cornea by means of the galvanic current. An eye cup filled with salt solution and with the positive pole attached was applied to the eye, the negative pole placed in contact elsewhere, and the current allowed to pass for two or three minutes, two or three times a week.

Doctor Randolph was struck by the difference in the results obtained when the interstitial keratitis was due to acquired and when to congenital syphilis.

Dr. Hiram Woods reported a number of cases that illustrated difficulties of diagnosis of the cause and of treatment. He urged the importance of the follow up system in these cases.

Doctor Holt used anaphoresis. A ten or twenty per cent. solution of iodide of sodium was painted over the lid, the negative pole was applied to the eye, and the galvanic current passed. Afterward cataphoresis might be employed with the positive pole, using strychnine.

Doctor Verhoeff called attention to the differences in the clinical picture when the keratitis was due to tuberculosis and when due to syphilis.

Doctor Stoll urged that an intensive study of the family was an important aid in diagnosis. Both he and Doctor Wilder, who followed, urged emphatically that the treatment must be directed to the disease, and not to the symptoms alone.

Present Status of Corneal Transplantation.—Dr. Sydney Walker, Jr., of Chicago, said that three types of transplantation had been tried: autoplasty, homoplasty, and heteroplasty, with many varied forms of operative procedure. The first two contained at least the essential elements for success. Failures, which were in an overwhelming majority, were due in the main to heteroplasty, foreign body transplants, sepsis, and unfavorable cases. Doctor Walker's experiments began on dead tissue to develop technic and his work has been of the autoplastic and homoplastic type. The technic consisted of a modified Tiersch graft, sewn directly to the cornea and covered by a total conjunctival flap. Failures have been due to sepsis, undeveloped technic, and opening of the anterior chambers, while successful cases show a cornea with a scar very faintly discernible under strong illumination. Living subjects were presented.

Doctor Weeks called attention to the exceedingly small number of successful cases that have been reported, and that at the best successes would be very few and only in well selected cases. He considered that the method suggested by the writer was promising. He had had but one case, and in that he succeeded in improving the vision only slightly.

Doctor Fox also had had one case in which the vision had been improved to counting fingers.

Tendon Shortening.—Dr. Henry H. Briggs, of Asheville, N. C., drew the tendon through a silver link which was then clamped so as to shorten the tendon the desired amount without the use of sutures.

Doctor Walter preferred his own method, but thought that perhaps the two methods could be combined with advantage.

Doctor Jervey approved of the operation. It caused no adhesions of the conjunctiva to the sclera.

Doctor Wells was not satisfied with the way in which the cases were reported.

Doctor Todd thought the operation might be useful in a certain class of cases, but his attempts to perform it had proved failures.

Doctor McLeish also had found difficulty in performing the operation and had devised a modified forceps to help.

Doctor Moore described his method of measuring the amount of shortening of the tendon, which he secured by means of sutures. Even when the sutures came out they remained in place until after adhesions had formed.

Tendon Transplantation of the Eye Muscles.—Dr. Harry W. Woodruff, of Joliet, Ill., transplanted the outer halves of the superior and inferior recti to the insertion of the externus in a case of incurable paralysis of that muscle. The result was improvement cosmetically, but not functionally.

Doctor Todd reported a case in which he had obtained a vast improvement, which was demonstrated by means of moving pictures.

Doctor Turner likewise reported a case in which he did not tenotomize the internal rectus and inserted the transplanted tendons in advance of the insertion of the external rectus. The reaction was severe, but he obtained some mobility which increased in time. He suggested the use of only one muscle inserted close to the cornea.

Lymphatic Nodular Keratoconjunctivitis.—Dr. Leo J. Goldbach, of Baltimore, said that the nodular cellular lymphoid deposits, or phlyctenules, of the corneoscleral border were eye manifestations of a systemic dyscrasia, suggesting in majority of cases some form of tuberculosis. While the microscopical sections of these nodules showed giant cells, it did not follow that the nodules were tubercular, but rather indicated that the cellular infiltrate was a manifestation of the disease and not the cause. The treatment was hygienic and sanitary. Tuberculin injections—bouillon filtrate—should be made in amounts from 0.000001 to 15 milligrams. Prolonged tuberculin injections with small doses was important and pulse, respiration, and temperature

should be watched carefully. Patients should sustain toxin given with no reaction.

In thirty-nine cases seven were found with pulmonary tuberculosis; sixteen had some form of tuberculosis; thirty-two had a positive von Pirquet; eighteen had adenoids and diseased tonsils; six showed the tubercle bacillus in sections; four showed tubercle bacilli in the sputum; eight physical examinations suggested some form of lung involvement; fifteen had a positive Wassermann reaction, eleven negative; seven had some member of the family with tuberculosis.

Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Acute Poliomyelitis. By George Draper, M. D., Associate in Medicine, College of Physicians and Surgeons, Columbia University; Associate Attending Physician, Presbyterian Hospital, New York. With a foreword by Simon Flexner. With Nineteen Illustrations. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. x-149.

The present small volume can hardly be said to be a complete monograph, although its appearance is opportune and the facts contained within its 150 pages authoritative. It cannot be said to approach, much less replace, the classical contribution of Wickman, for instance, which is available to English readers.

The author lays some emphasis upon the "dromedary" type of onset, since it was accented in the original Rockefeller Institute monograph of which this is largely an adaptation and abridgment. The clinical forms are inadequately described as far as the neurologist is concerned, as it appears to be the author's idea rather to reinforce the idea that poliomyelitis is really a widespread systemic infection in which the nervous pathology, while prominent and even predominant, is not a necessary part of the disorder. The chief accent of the work is laid, therefore, upon general features and considerable space is devoted to short reports of individual cases. With its limitations here outlined the work is an excellent one and worthy of the serious attention of all clinicians.

Psychological Medicine. A Manual on Mental Diseases for Practitioners and Students. By Maurice Craig, M. A., M. D. (Cantab.), F. R. C. P. (Lond.), Physician for and Lecturer in Psychological Medicine, Guy's Hospital, Examiner in Psychological Medicæ for Diploma in Psychological Medicine, Cambridge University; Examiner in Psychology and Psychological Medicine, London University, etc. Third Edition. With Twenty-seven Plates, some in Color. Philadelphia: P. Blakiston's Son & Co., 1917. Pp. xii-484. (Price $6.).

In many ways the old facultative psychology still reigns rampant in this work. Definitions largely take the place of processes, and in true English psychiatric style, fashioned after such dogmatic intellectuals as Mercier and his group, we have presented to us a series of mechanical descriptive phenomena which have lost their humanism and become detached labels. Why continue in a medical work such footless discussions of what is insanity? This is a relic of the Roman period post-Hellenic decadence, when the stupid, stodgy Romans, unable to decipher what they called the subtleties of the Greek spirit of classifications of mental disorders, threw them all into one bin—insania—from which in certain lands they have never emerged. This book in part tends to perpetuate such stupidity and in this respect is misleading and mischief making. One might have supposed that a work going through three editions might really have had some ideas in it of the social functions of the human being, which largely through ideas and conduct are the signs external of the activities of his structures internal, but this book is devoid of ideas, or any such Greek subtleties. We trust it will be entirely rewritten if it should again be revised and then get away from its banal formalism and scholasticism.

After Office Hours

The *Survey* seems always in touch with the work of the Red Cross. Thus the leading article in the June 9th number discusses the visit of the Red Cross War Council to France, and the issue for June 16th gives much information about the work of the organization and how volunteers can help.

* * *

You might search through the hospitals of New York and you wouldn't find three such attractive nurses as are pictured on one page in the July *Vanity Fair*—Frances Starr, Chrystal Herne and Gladys Hanson. It is just possible—we hesitate to mention it—that you could find three you would prefer to nurse you through an attack of typhoid.

* * *

Speaking of the versatility of doctors, how about nurses? There is Mary Roberts Rhinehart, for example. She has written thrilling detective stories, humorous spinster and "sub deb" stories, realistic hospital stories, entertaining travel stories, every kind of story you can imagine. Now she comes out in the *Saturday Evening Post* for June 23d with an article on the navy and its personnel. And Mary used to be a nurse!

* * *

Collier's is doing a valuable service by helping the nation keep well. Under the title of Do Your Bit by Keeping Well in the June 9th issue we find a valuable article calling attention to the prevention of disease and offering to send various pamphlets on public health topics to anyone who writes. We might suggest that *Collier's* get in touch with the National Committee for Mental Hygiene and add mental prophylaxis to its work.

* * *

How many of the readers of the New York Medical Journal, we wonder, have sat as children before a lithographic reproduction of "The Spirit of '76" and felt the blood leap through their veins as their hands grasped imaginary muskets and shadowy swords. Washington at Valley Forge, Don't-give-up-the-Ship Lawrence, Dewey at Manila Bay, and now it's Pershing somewhere in France. All honor to Archibald M. Willard, who caught the soul of a nation and put it on canvas. He is eighty years old this year. *Everybody's* for July gives a picture and some biographical details of this little known artist.

* * *

Fiction can point a moral which would seem dull if given didactically. In the *Saturday Evening Post* for June 16th there is a story, Old Red Rambler, Red Rambler being the name of a whiskey which has been the property and financial backbone of an aristocratic old family for generations. Wallace Irwin, as always, has drawn his characters well—the fine, old school father and the degenerate, alcoholic son. On the eve of a State election with prohibition the real issue the profligate heir to the Red Rambler fortune escapes from a sanatorium and shoots a dancing girl. As his son goes to jail, the aristocratic old father is wondering where he got his bad blood.

* * *

A delightfully nebulous, mystic article on spiritualism, telepathy, and the other mysterious, uncanny things that have such an attraction for middleaged women whose chief curses are embonpoint and ennui, is The Psychic Gift in the July *Metropolitan*. The very name of the writer, "Ollah Toph," fairly reeks of sandalwood, and incense, and mysticism, and bosh. She says, "I am psychic, having the gift demonstrable through mental phases," which is clear to the point of Jabberwockianism. She speaks of "rarefied self," "an extraneous personality," "clairvoyance," "prevision," "clairaudience," "clairsentience," and things of that sort just as unconcernedly as you or I would talk about livers, or buttons, or Liberty bonds. In short, she is a master of jargon of the cult and assures us, "My gift is not commercialized."

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending June 27, 1917:

Bryan, W. M., Passed Assistant Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Crohurst, H. R., Sanitary Engineer. Directed to proceed to Petersburg, Va., on special temporary duty.

DeSaussure, R. L., Assistant Surgeon. Granted five days' additional leave of absence on account of sickness from June 15, 1917.

Fricks, L. D., Surgeon. Relieved at Victor, Mont., and directed to report for duty in malaria investigations, with headquarters at New Orleans, La.

Guiteras, G. M., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Hasseltine, H. E., Passed Assistant Surgeon. Directed to proceed to Baltimore, Md., for observation of water supplied by common carriers to passengers in interstate traffic.

Irwin, Fairfax, Senior Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

King, W. W., Surgeon. Relieved as chief quarantine officer of Porto Rico and directed to proceed to St. Thomas for duty as quarantine officer of the Virgin Islands.

Lloyd, B. J., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Lumsden, L. L., Surgeon. Relieved at Hygienic Laboratory, Washington, D. C., and ordered to proceed to St. Louis, Mo., and assume charge of the studies of rural sanitation.

McKeon, F. H., Surgeon. Granted twelve days' leave of absence from June 29, 1917.

Magruder, G. M., Surgeon. Ordered to proceed to San Francisco, Cal., July 5, 1917, for examination to determine his fitness for promotion to the grade of senior surgeon.

Perry, N. V., Constructing Engineer. Directed to proceed to the Baltimore, Md., Marine Hospital for conference relative to improvements in buildings.

Pettus, W. J., Senior Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Phelps, E. B., Professor. Directed to proceed to Charleston, W. Va., on special temporary duty.

Rhynus, C. P., Assistant Sanitary Engineer. Relieved at Hygienic Laboratory, and directed to proceed to New Orleans, La., for duty in malaria investigations.

Smith, E. E., Sanitary Bacteriologist. Directed to proceed to Charleston, W. Va., on special temporary duty.

Spencer, R. R., Assistant Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Stimson, A. M., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Stout, J. D., Assistant Surgeon. Ordered to proceed to Ellis Island, N. Y., for instruction in methods of detecting feeblemindedness and other abnormal conditions in aliens.

Veldee, M. V., Sanitary Bacteriologist. Directed to proceed to Arkansas and other localities for duty in field surveys of sanitary conditions on watersheds in States south of the Potomac and east of the Mississippi rivers, and in Arkansas.

Waller, C. E., Assistant Surgeon. Ordered to proceed to Cincinnati, Ohio, for duty in field surveys of sanitary conditions on watersheds south of the Ohio and east of the Mississippi rivers.

White, M. J., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Williams, L. L., Senior Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Wrightson, W. D., Sanitary Engineer. Ordered to proceed to Baltimore, Md., for observation of water supplied by common carriers to passengers in interstate traffic.

Young, G. B., Surgeon. Ordered to report to the Surgeon General of the Navy for special duty, under the executive order dated April 3, 1917, and at the request of the Secretary of the Navy.

Births, Marriages, and Deaths

Married.

Cleveland-Colgate.—In Bennington, Vt., on Wednesday, June 20th, Dr. Mather Cleveland, of New York, and Miss Susan Everett Colgate.

McVey-Hurley.—In Dorchester, Mass., on Thursday, June 28th, Dr. Frederick J. McVey, of Boston, and Miss Anna Frances Hurley.

Porter-Spyker.—In New Orleans, La., on Monday, June 18th, Dr. Sydney D. Porter, of Baton Rouge, and Miss Nella Spyker.

Smith-Allen.—In New York, N. Y., on Tuesday, June 12th, Dr. Dudley Smith, of Oakland, Cal., and Miss Florence Carol Allen, of Spokane, Wash.

Storer-Risden.—In Berkeley, Cal., on Saturday, June 16th, Mr. Tracey I. Storer and Dr. Ruth C. Risden.

Treiber-Graff.—In Trenton, N. J., on Sunday, June 17th, Dr. Benjamin A. Treiber and Miss Bella Graff.

Watts-Hory.—In New York, N. Y., on Saturday, June 9th, Dr. Joseph Watts, of Bridgeport, Conn., and Miss Katherine Alberta Hory.

Died.

Brown.—In Orange, Texas, on Tuesday, June 19th, Dr. Edgar W. Brown, aged fifty-six years.

Chapin.—In Boston, Mass., on Monday, June 25th, Dr. Amory Chapin.

Cotter.—In Los Angeles, Cal., on Saturday, June 16th, Dr. Peter G. Cotter, aged sixty years.

Hayes.—In Bellefonte, Pa., on Wednesday, June 20th, Dr. Robert G. H. Hayes, aged fifty-seven years.

Hobbs.—In Chicago, Ill., on Thursday, June 21st, Dr. John Oliver Hobbs.

Howland.—In New Haven, Conn., on Monday, June 25th, Dr. Charles Hubbard Howland, aged sixty-seven years.

Hoy.—In Columbus, Ohio, on Wednesday, June 13th, Dr. William S. Hoy, of Wellston, aged sixty-four years.

Jenkins.—In Stockholm, N. Y., on Thursday, June 21st, Dr. Theron D. Jenkins, of Winthrop, N. Y., aged twenty-six years.

Lankford.—In Norfolk, Va., on Monday, June 18th, Dr. Livius Lankford, aged sixty-four years.

Pursselley.—In Springfield, Mo., on Thursday, June 21st, Dr. Walter L. Pursselley, aged fifty-one years.

Rex.—Wichita, Kansas, on Wednesday, June 20th, Dr. Loren E. Rex, aged forty-one years.

Sidney.—In Fitchburg, Mass., on Monday, June 25th, Dr. Austin W. Sidney, aged ninety-three years.

Smith.—In Danville, Pa., on Tuesday, June 19th, Dr. Nelson M. Smith, aged sixty years.

Stillings.—In Concord, N. H., on Friday, June 22nd, Dr. Ferdinand A. Stillings, aged sixty-eight years.

Tearney.—In Baltimore, Md., on Monday, June 25th, Dr. Joseph F. Tearney, aged sixty-two years.

Tubb.—In Bessemer, Ala., Wednesday, June 20th, Dr. James M. Tubb, aged sixty-six years.

Ward.—In Bloomington, Ind., on Sunday, June 17th, Dr. James G. Ward, aged seventy-one years.

Whitman.—In Los Angeles, Cal., on Thursday, June 14th, Dr. Charles H. Whitman, aged sixty-three years.

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Queer Mental and Nervous Troubles That May Be Caused by Shell Explosions.—The effects of mental or nervous accidents that are determined by the explosion of a shell on fighting men are manifold and varied, says the *Courier des Etats-Unis*, New York. Dr. G. Dumas makes a special study in the *Revue de Paris* of the nervous phenomena presented by the victims of concussions and makes some extremely interesting observations. A large number of the victims have, for reasons that are at times trivial, acute crises of anguish. The imitation, albeit coarse, of the cannon report suffices to provoke violent reactions upon those that are not in a condition of stupor. Out of 348 victims sixty-five were dumb and could only make responses in writing or motions, apparently unaware that there could exist any other means of communication. When ordered to speak, some of them made a very strong expiration without bestirring their larynx; others limited themselves to opening the mouth without moving either tongue or lips, while the majority could not articulate one word, and imitated rather poorly and unsuccessfully the articulating motions that were made before them.

A highly interesting class of those affected is that of "campto-cornics," or "trunk curved." These hapless soldiers through the somatic commotion after the explosion of a projectile, suffer a more or less marked incurvation of the trunk. Doctor Dumas has observed nine cases of this kind. With some the incurvation was more pronounced over the dorsal part of the vertebral column; with others it was chiefly present over the lumbar region. These men declared invariably their inability to stand erect without pain, and in fact offered resistance and complained when an attempt was made to straighten them by placing their backs against a wall. Blindness, even very incomplete, is rare enough among these individuals. A former Sorbonne student described in detail to Doctor Dumas the circumstances in which he was struck with temporary bilateral disturbance of the eyesight. He remembers that he was carried to the emergency post after the explosion of the shell. The first sensation that he experienced, on the third day, was one of stupefaction which manifested itself mainly by a confusion of words, a continuous stammering upon every attempt to speak, and finally an almost complete blindness. "I begin by seeing some kind of an insect going through the air from right to left; thereupon all becomes confused and subjects appear to me as going inside of one another; I no longer distinguished anything exterior."

The most peculiar cases are produced in the order of global amnesias, extending to all phases of life, and elective amnesias concerning only a very particular class of recollections. Doctor Dumas cites the case of a lieutenant struck with verbal blindness after a commotion. He was unable to read the texts either printed or manuscript, but when asked to copy a manuscript he could draw it without recognizing the characters with such a degree of accuracy that it was impossible to tell the copy from the model. Another man stricken verbally blind copied most accurately and servilely without recognizing a single letter, English, Russian, and Greek texts. Both men easily sign their names, owing to the preservation of their motor habits, but were utterly incapable of recognizing their flourishes or reading their names. No less interesting are the cases of verbal deafness, patients able to hear the sound of words, but unable to understand the sense. Their own language has the same effect on them as a foreign language they would never have heard before. On the other hand, Doctor Dumas has not found thus far any agraphia cases among those "struck" by explosions; that is, cases where the patient has lost all the motions that are necessary in writing.

Training Medical Artists.—During the summer of 1909, while I was at my camp, Dr. Thomas S. Cullen, president of the Southern Surgical and Gynecological Association, is reported by the New York *Times*, June 17, 1917, to have said, in the course of his address at the annual meeting of the association, the thought came to me that it would be a splendid thing for American medicine if we had a department of art in medicine, where artists who wanted to make medical art their life work could get a training of two or three years. I felt that, if this could be accomplished, in ten years all the leading medical centres could have good medical artists and that in twenty years we should lead the world in medical illustrations.

Any man writing a textbook scans the literature for good illustrations and naturally would select those from this country. This would carry American illustrations to all parts of the globe and greatly redound to the credit of American medicine. With fear and trepidation I laid the plan before a broad-minded and liberal business man, who promised $5,000 a year for three years to see if the plan would prove a success. It was a success, and at the end of the three years he consented to support it for two years more. Last February he again consented to supply funds for three years more.

The last annual report of the Department of Art in Medicine, as sent to the donor and to Dr. Frank Goodnow, president of the Johns Hopkins University, by Mr. Brödel, the director, showed that artists had been trained and sent to Boston, New Haven, Philadelphia, Sayre, Pa.; Baltimore, Richmond, Cleveland, Chicago, Rochester, Minn.; St. Louis, El Paso, and San Francisco. At the present time Mr. Brödel has sixteen artists in training.

New Publications Received

The Plan o' the House o' Man, Sir, or The Parts Water and Position Play in the Prevention and Treatment of Physical Disorders of the Body. By James Cabell Minor, Former Sanitary Inspector Division of the Philippines, United States Army. Illustrated by Theo Keller and the Author. Pictures and Diagram by the Author and the Cartoonists, Robert Minor, Jr., and Ad Goodwin. Third Edition. Little Rock: Central Printing Company, 1017 Pp. 39. (Price $1.00.)

Thirty-fourth Annual Report of the Provincial Board of Health of Ontario, Canada, for the year 1915. Printed by order of the Legislative Assembly of Ontario. Toronto: A. T. Wilgress, 1916. Pp. vii-167.

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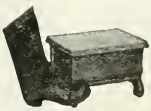

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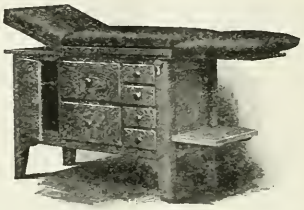

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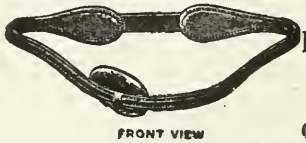

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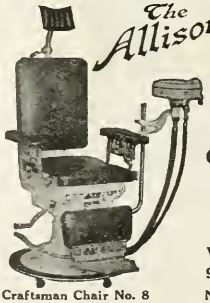

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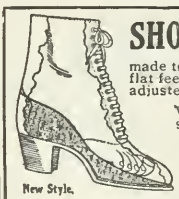

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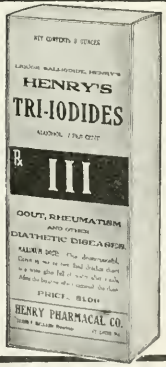

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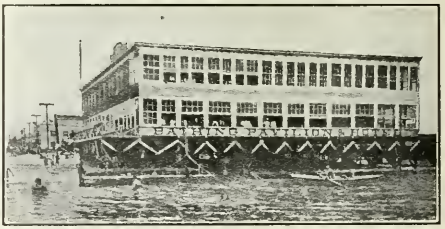

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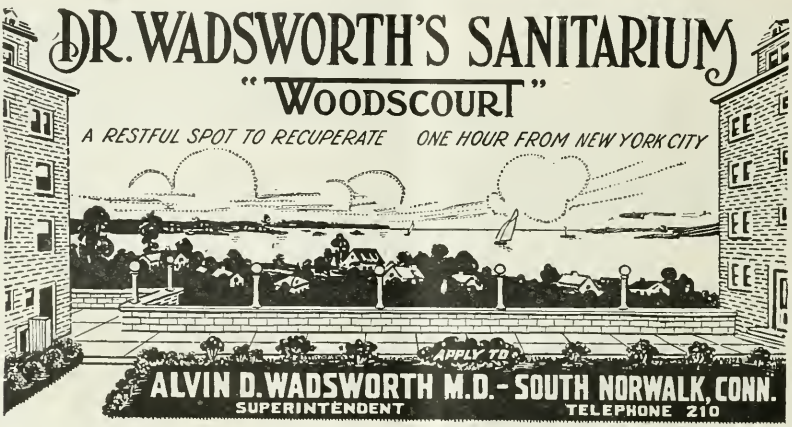

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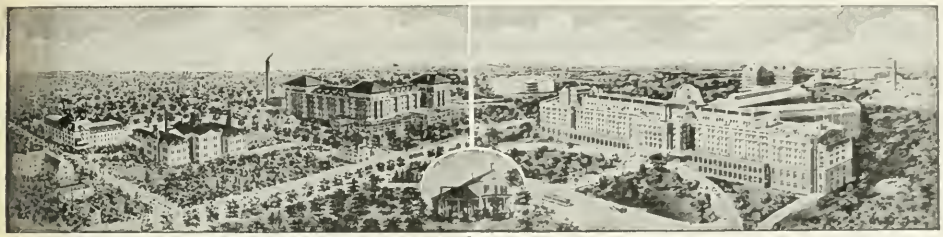

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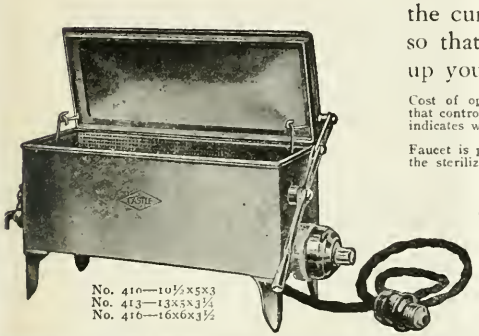

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